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Cinematographer

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The Magazine of Motion Picture Photography

IN THIS ISSUE

•Colortran Lighting System Explained
•Similarities and Differences In B&W Printing
•"Wreck of the Mary Deare"—Epic In Special Effects

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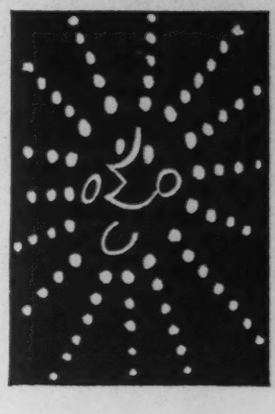

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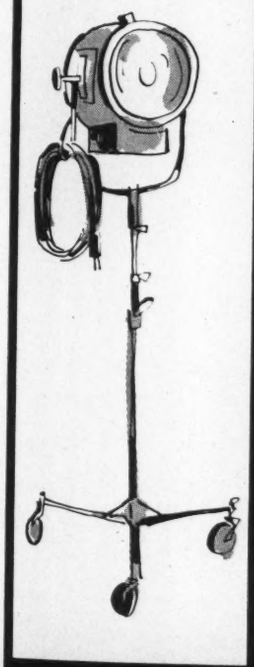

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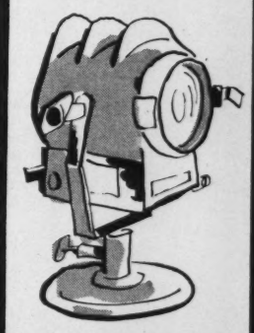

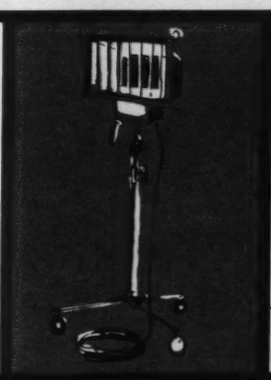

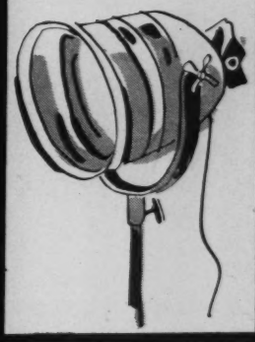

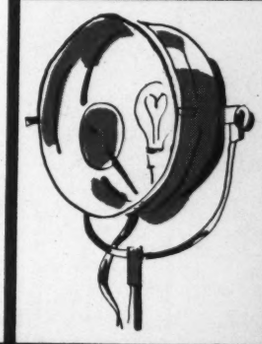

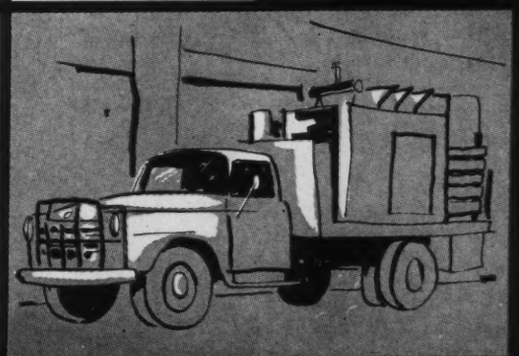

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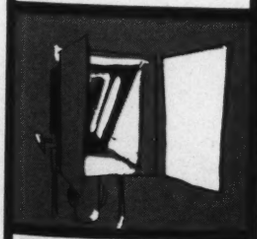

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AMERICAN
Cinematographer

April, 1960 • Vol. 41, No. 4

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ON THE COVER

USING A MOTORIZED Bolex H-16 camera with 400-foot magazines, mounted on a hi-hat in stern of small dinghy, cameraman-director Stanley M. Loewy lines up for a closeup of swimming action for his 16mm color-and-sound training film, "No Second Chance," aimed at reducing swimming pool casualties. His story begins on page 238 of this issue.

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7 first time features for 16mm camera users

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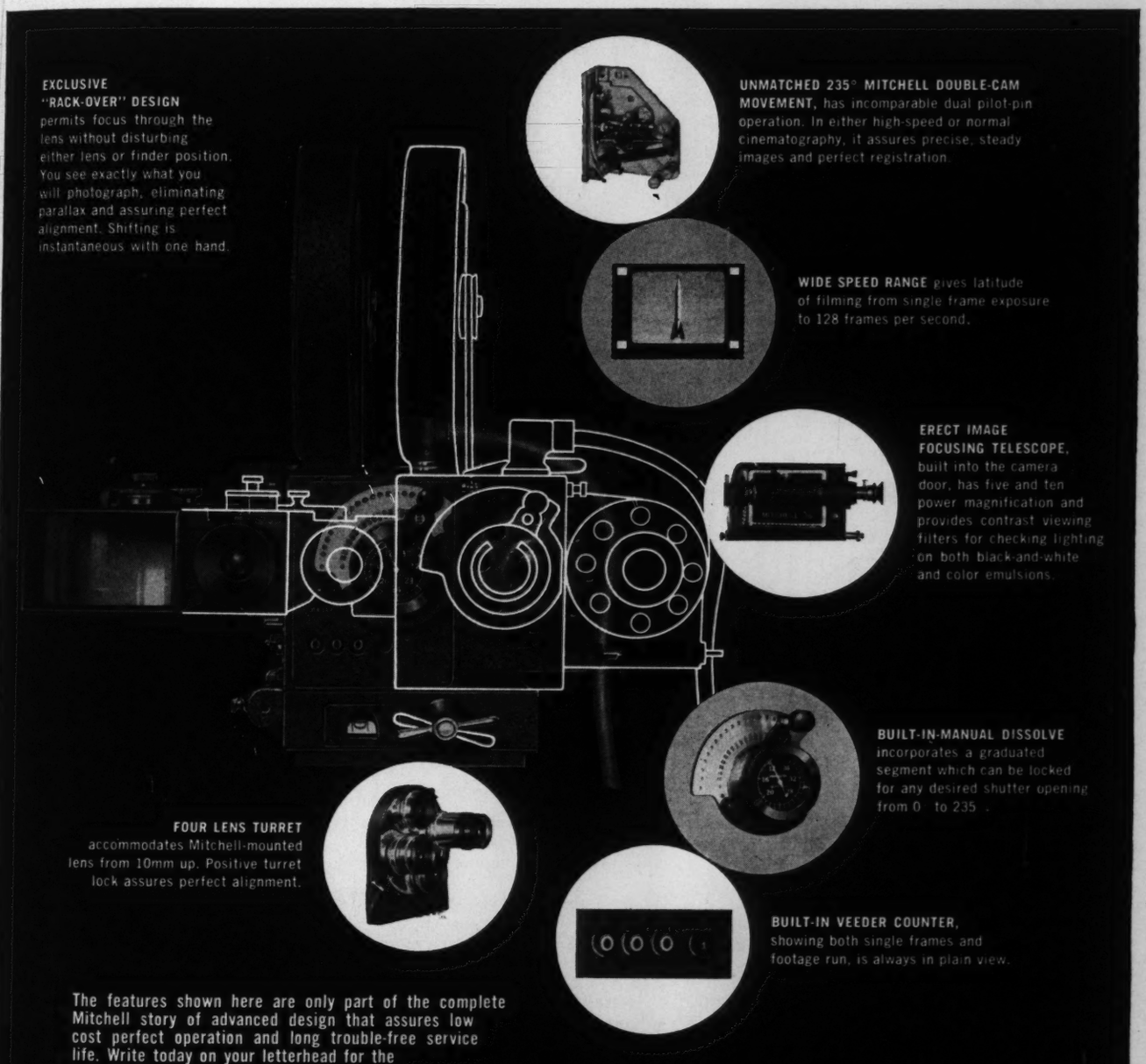

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INDUSTRY NEWS

News briefs of industry activities, products and progress

SPEAKING BEFORE members of the A.S.C. at Research Council's headquarters in Hollywood, President William F. Kelley explains how lack of simple component in circuitry of average home TV receiver makes many receivers incapable of rendering optimum picture quality when filmed programs are transmitted. Demonstration pointed to need for greater care in lighting and photographing films for TV to minimize the problem.

Economy Move Shutters Research Council

It was ironic that at the height of one of its most timely and significant developments, the Motion Picture Research Council, Inc., in Hollywood was ordered to suspend operations by its sponsor, the Association of Motion Picture Producers.

Council President William F. Kelley, prior to the closing order, had been demonstrating to members of various technical branches of the motion picture industry results of the Council's latest research program.

Purpose of the program was to determine the kind and quality of lighting and photography for motion picture films that produced optimum results in television transmission. For its studies, the Council had installed in its headquarters a complete closed-circuit television chain.

When its studies had been concluded, the Council held a series of seminars in which its findings were graphically demonstrated. Members of the American Society of Cinematographers, many of whom are currently photographing program and advertising films for TV, were among the first of the industry's technical men invited.

At these sessions, Kelley and members of his staff explained that most of the poor reception of TV seen on home receivers is the fault, not of the films transmitted, but of the home receivers themselves—which, it was pointed out, in most cases lack a simple and relatively inexpensive component, a D. C. restorer. Some of the very first television receivers, Kelley explained, had this component. But it apparently was eliminated from later models when manufacturers, as a matter of economy, began to cut corners in the construction of TV chassis.

By means of TV receivers installed in the Council's auditorium, Kelley was able to demonstrate reception results of video films televised in closed circuit. The pictures were piped simultaneously to a conventional home television receiver, which was minus the D. C. restorer, and to a standard TV studio receiver equipped with the component.

A demonstration film purposely made for the Council's research program was transmitted to the two receivers so that audiences could observe results on each. The home receiver showed that it was incapable of reproducing an otherwise correctly lighted and photographed scene, once the ratio of white-to-black areas in a scene exceeded a certain norm.

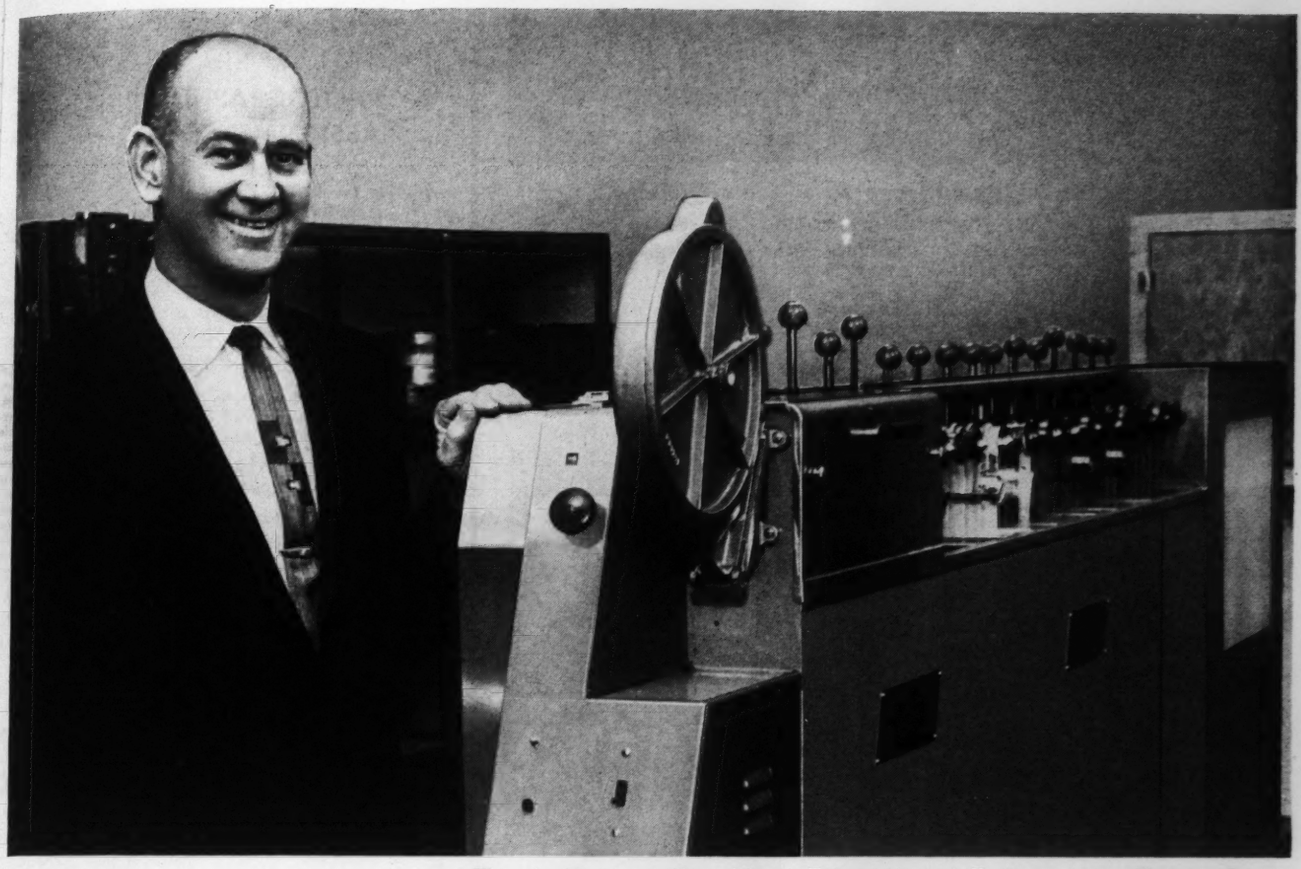
The TV station receiver, on the other hand gave a truer rendition of scenes, with no perceptible change in picture quality and contrast resulting from fluctuating ratios between black and white areas.

What the Council's studies attempted to show is that motion pictures made for television today must be photographed in the light of present-day deficiencies in average TV home receivers—with no excessive light areas in scenes, as when a TV star is shot from a low camera angle so he appears silhouetted against a bright sky, etc.

Cinematographers, reportedly were impressed with the demonstrations and it was concluded that the Council's findings would have an immediate effect on the lighting and photographic techniques employed in the production of all films for television.

G-E Marketing New Projector For TV Films

General Electric Company will market a revolutionary new continuous 16mm film projection system which promises to produce improved quality in old films on TV screens. Designed by Eastman Kodak Co., projector features diffused light system which tends to minimize effects of scratches and dirt particles on old films. Tilting, rotating mirrors, which smoothly follow the film, reflect an immobilized, stable image into the TV film projection system.



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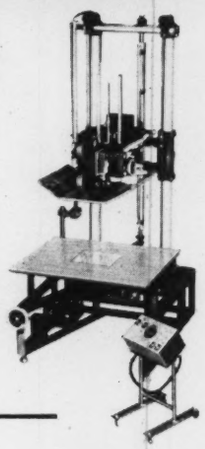
BASIC STAND: Welded steel base, ground steel 4½" diameter dual columns. Ball bearing camera carriage, manual drive. Foursided zoom scale. Shadowboard. Fixed table top 36" x 48" has 9" x 12" hole in center with removable glass and wood inserts. Overall height 11'4", width 48", depth 58".

CAMERA: OXBERRY 35mm with rackover and viewfinder. Fixed pin registration. 47mm lens. Autofocus. 400-ft magazine, automatic take-up and single speed stop motion motor. Price, complete ..... **$9,700.**



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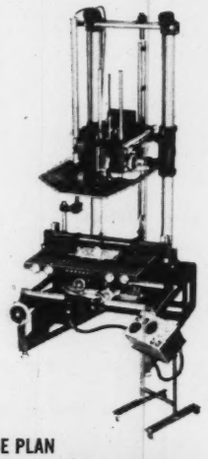

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PHOTOGRAPHIC ASSIGNMENTS

What the indu try's cameramen were shooting last month.

By MARION HUTCHINS

ACADEMY STUDIOS

FLOYD CROSBY, ASC, "A Cold Wind in August" (Troy Films) with Lola Albright and Scott Marlowe. Alexander Singer, director.

ALLIED ARTISTS

BURNETT GUFFEY, ASC, "Hell to Eternity" (Atlantic Pictures Prod.; shooting on Okinawa) with Jeffrey Hunter and David Janssen. Phil Karlson, director.

AMERICAN NATIONAL

CURT FETTERS, "Tombstone Territory"* (Ziv-TV) with Pat Conway.

JACK MARQUETTE, RICHARD RAWLINGS, "The Man Dawson"* (Ziv-TV) with Keith Andes.

JACK MARQUETTE, MONROE ASKINS, "Man and the Challenge"* (Ziv-TV) with George Nader.

RICHARD RAWLINGS, "Seas Market"* (Pilot; Ziv-TV).

MONROE ASKINS, JACK MARQUETTE, "Bat Masterson"* (Ziv-TV) with Gene Barry.

WILLIAM WHITLEY, ASC, "Men Into Space" (Ziv-TV) with Bill Lundigan.

CALIFORNIA STUDIOS

KENNETH PEACH, ASC, Dollar & Sense industrial film (Roland Reed Prods.) Arthur Pearson, director.

HAL MCALPIN, "Progress Parade #12" (industrial film; Roland Reed Prods.) Arthur Pearson, director.

STANLEY CORTEZ, ASC, "Dinosaurus" (C'Scope & Color; Jack H. Harris Prod. with Ward Ramsey and Kristina Hanson. Irvin S. Yeaworth, Jr., director.

STUART THOMPSON, ASC, "Have Gun, Will Travel"* with Richard Boone and Kam Tong.

FLEET SOUTHCOTT, "Gunsmoke"* with James Arness and Dennis Weaver.

CASCADE PICTURES

ROY SEAWRIGHT, Commercials*.

ELWOOD BREDELL, ASC, Commercials*

WILLIAM SKALL, ASC, Commercials*

COLUMBIA

MAURY GERTSMAN, ASC, Commercials* (Screen Gems).

WAITER STRENGE, ASC, Commercials* (Screen Gems).

JAMES DROUGHT, Commercials* (Screen Gems).

MIKE ELLIOTT, Commercial* (Screen Gems).

OSWALD MORRIS, "The Guns of Navarone" (Color; Highroad Prod.; shooting in Greece) with Gregory Peck and David Niven. Alexander Mackendrick, director.

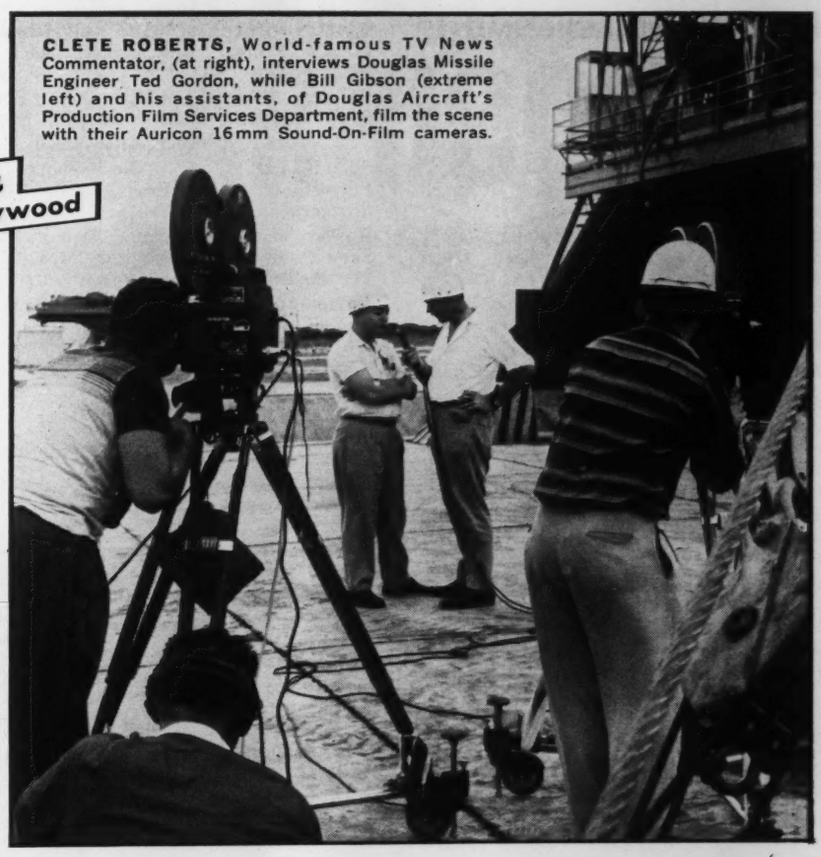
CHARLES LAWTON, JR., ASC, "The Whackiest Ship in the Army" (C'Scope & Color; Fred Kohlmar Prods. shooting in Hawaii) with Jack Lemmon and Ricky Nelson. Richard Murphy, director.

JOE MACDONALD, ASC, "Pepe" (George Sidney Int'l-Posa Prods.; CinemaScope & Color) with Cantinflas, Dan Dailey and Shirley Jones. George Sidney, producer-director.

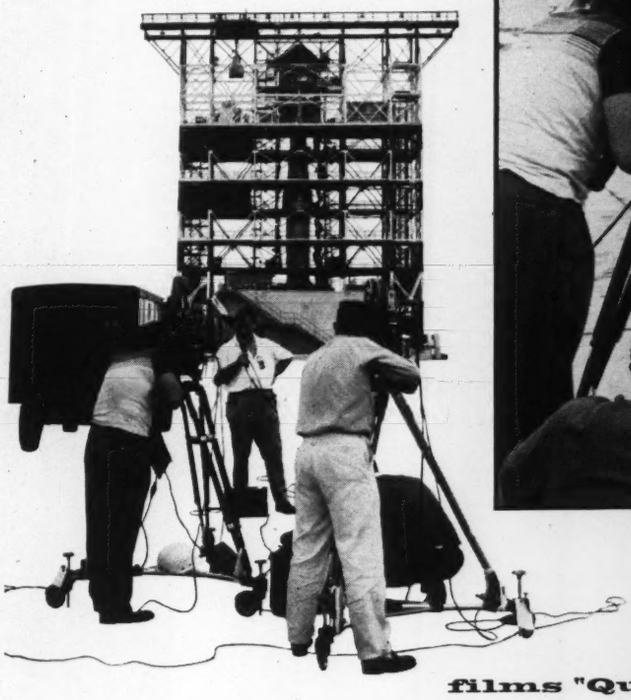
Continued on Page 208

DOUGLAS

Auricon Hollywood



CLETE ROBERTS, World-famous TV News Commentator, (at right), interviews Douglas Missile Engineer Ted Gordon, while Bill Gibson (extreme left) and his assistants, of Douglas Aircraft's Production Film Services Department, film the scene with their Auricon 16mm Sound-On-Film cameras.



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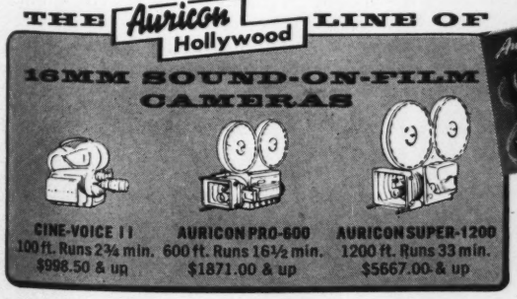

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PHOTOGRAPHIC ASSIGNMENTS

Continued From Page 206

IRVING LIPPMAN, "Manhunt"* (Screen Gems) with Victor Jory and Patrick McVey. Fred Jackman, director.

CHARLES WELBORN, "Tightrope"* (Screen Gems) with Michael Connors.

GERT ANDERSEN, ASC, "Donna Reed Show"* (Screen Gems) with Donna Reed. Oscar Rudolph, director.

PHILIP TANNURA, ASC, "Man from Blackhawk"* (Screen Gems) with Robert Rockwell.

DESILU STUDIOS—Culver City

LUCIEN ANDRIOT, ASC, "U. S. Marshall"* (Desilu Prods.) with John Bromfield.

CHARLES VAN ENGER, ASC, "Betty Hutton Show"* (Desilu Prods.) with Betty Hutton. Richard Kinon, director.

HENRY CRONJAGER, "Grand Jury"* (Desilu Prods.) with Lyle Bettger and Harold Stone. Sobey Martin, director.

EDWARD FITZGERALD, ASC, "The Gale Storm Show"* (ITC Prods.) with Gale Storm and ZaSu Pitts. James Kern, director.

HARKNESS SMITH, "Pony Express"* (Desilu Prods.) Jean Yarborough, director.

DESILU STUDIOS—Gower

KENNETH PEACH, ASC, "Lassie"* (Jack Wrather Prods.) with June Lockhart and John Provost.

ROBERT PLANCK, ASC, "The Millionaire"*. James Sheldon, director.

PAUL IVANO, "The Texan"* (Desilu Prods.) with Rory Calhoun.

CHARLES STRAUMER, "The Untouchables"* (Desilu Prods.) with Robert Stack and Jerry Paris.

ROBERT PITTACK, ASC, "Ann Sothern Show*" (Desilu Prods.) with Ann Sothern.

DESILU STUDIOS—Hollywood

SID HICKOX, ASC, "Westinghouse-Desilu Playhouse"* (Desilu Prods.). Ralph Nelson, director.

ROBERT DE GRASSE, ASC, "Danny Thomas Show"* (Desilu Prods.) with Danny Thomas, Sheldon Leonard, director.

LOTHROP WORTH, ASC, "The Real McCoy's"* (Brennan-Westgate Prods.) with Walter Brennan. Hy Averback, director.

GENERAL SERVICE STUDIOS

HAROLD LIPSTEIN, ASC, "Adventures of Ozzie & Harriet"* (Stage 5 Prods.) with Ozzie, Harriet, David and Rickey Nelson. Ozzie Nelson, director.

FRANK REDMAN, ASC, "Perry Mason"* (CBS-TV) with Raymond Burr and Barbara Hale.

HARRY WOLF, "Hennessey"* (Hennessy Prods.) with Jackie Cooper.

GOLDWYN STUDIOS

NORBERT BRODINE, ASC, EUGENE POLITO, "Loretta Young Show"* (Lewislor Prods.) with Loretta Young.

INDEPENDENT

CHARLES LANG, JR., ASC, "The Magnificent Seven" (Panavision & Color: shooting in Mexico) with Yul Brynner and Eli Wallach. John Sturges, producer-director.

ARTHUR FEINDEL, ASC, "Studs Lonigan" (Longridge Ent. for UA) with Christopher Knight and Venetia Stevenson. Irving Lerner, director.

KEYWEST STUDIOS

WALTER STRENGE, ASC, Series of regligious films* (Family Films) Edward Dew, director.

METRO-GOLDWYN-MAYER

JOSEPH RUTTENBERG, ASC "Butterfield 8" (Afton-Linebrook Prod.; shooting in N.Y.) with Elizabeth Taylor and Laurence Harvey. Daniel Mann, director.

MILTON KRASNER, ASC, "Go Naked in the World" (Arcola Prod.) with Gina Lollobrigida and Anthony Franciosa. Ranald MacDougall, director.

GEORGE CLEMENS, ASC, "Twilight Zone"* (CBS-TV).

NICK MUSURACA, ASC, "Asphalt Jungle"* (Pilot.)

JOHN NICHOLAUS, "All Those Bells"* (Pilot).

DALE DEVERMAN, "One Step Beyond"* with John Newland.

WILLIAM MARGULIES, ASC, "Not for Hire"* (Calif. National Prods.) with Ralph Meeker.

PHILIP LATHROP, "Peter Gunn"* (Spartan Prods.) with Craig Stevens and Lola Albright.

ROBERT SURTEES, ASC, "Cimarron" with Glenn Ford and Maria Schell. Anthony Mann, director.

MAURY GERTSMAN, ASC, "Mr. Lucky"* (CBS-TV).

GEORGE FOLSEY, ASC, Commercials*.

N.B.C.

ALAN STENSVOLD, ASC, "You Bet Your Life"* with Groucho Marx. Bob Dwan and Bernie Smith, directors.

Continued on Page 212

Nationally-known

FLUID PAN HEAD

Complete Satisfaction guaranteed or your money back!

Greatly Reduced for Close-Out

A "once-in-a-lifetime" opportunity to buy the nationally-known FO-RO Model 75 Viscous Damped tripod head at drastically reduced prices – for a limited time only.

Specified and used by all major movie studios as well as by top professional photographers, the FO-RO Pan Head, available in limited supply for a very brief time, can be purchased with a 30-day money-back guarantee, for the low, low price of $89.50. Normally priced at $125.00, this outstanding tripod head is being closed out from the manufacturer's stock.

Each FO-RO Pan Head is brand new. Time-tested and accepted as the finest on the market, this model is going back to the drawing board to get a "new look." Present models are being offered to the profession so that shelves can be cleared and made ready for the new model when it gets in production.

The FO-RO is engineered for the finest 8mm and 16mm movie cameras, and will adapt to just about any good tripod. You *cannot* afford to miss this chance to buy a truly professional tripod head, viscous damped, and at this amazingly low price of $89.50.

ADAPTER PLATE–with built-in Level to standardize PRO-JUNIOR, SOS, B & S, and similar tripods – $15.00.

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SEND YOUR CHECK OR MONEY-ORDER. WE PAY POSTAGE.

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Gentlemen: I want to take advantage of your limited offer. I am enclosing my Check ☐ Money Order ☐ for $89.50. Please send me your FO-RO Pan Head, complete and ready for operation.

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economical lip-synch filming with famed ARRI quality...

ARRICORD 35

SINGLE UNIT DOUBLE SYSTEM PICTURE AND SOUND CAMERA

The Arricord 35 is a combination of the latest Arriflex 35mm Model IIB camera and a magnetic recording unit which uses perforated 17½mm magnetic recording film. The combined units are housed in a compact sound blimp having external controls for both sound and picture recording.

In the Arricord, the Arriflex camera component is permanently joined to the recorder unit by a special precision gear drive, which assures constant speed and smooth, even motion in the mechanisms driving both the negative and magnetic films. A 24 Volt governor controlled DC precision motor powers the entire unit.

The Arricord answers the demand for a compact and portable double system sound recording camera with the convenience, money and labor saving features of a single system camera. Because the entire unit is driven by a 24 Volt battery pack it eliminates the need for AC generators or inverters.

Another Product of ARRI Ingenuity

TECHNICAL DATA

CAMERA SECTION

Focus & diaphragm externally controlled • Through-the-lens focusing and viewing • 400 ft. magazine film capacity • Three-lens turret • PLUS—all the famous ARRIFLEX 35 camera features.

RECORDING SECTION

Made by Klangfilm to professional standards • Takes 450 ft. standard 17½mm magnetic film • Built-in recording and test meter • Frequency response: 30 to 10,000 cps. • Two microphone inputs with mix facilities.

Equalization: Bass 0; −6; −12 db
Treble +2 to +14 db

PLUS: built-in intercom from recordist to cameraman, electric slate, monitoring before or after recording, and many other fine features.

WEIGHTS: ARRICORD..72 lbs. Amplifier..28 lbs.
Battery pack..42 lbs. (approx.)

FOR SALE, RENT, OR LEASE

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If Your Market Is Makers of Motion Pictures, In Any Field—

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is a merchandising potential you cannot afford to overlook!

The A.S.C. PHOTOGRAPHIC MANUAL will not only be the world's finest compendium of technical data for cinematographers and others engaged in producing 16mm and 35mm motion pictures, BUT WILL BE A SOURCE OF REFERENCE FOR EQUIPMENT, ACCESSORIES AND SERVICES related to the production of films.

Note below the impressive list of some of the manufacturers and service companies whose advertising will appear in the initial issue of the A.S.C. PHOTOGRAPHIC MANUAL. Then consider joining this impressive group. Forms close soon. Write for further information and rate card today!

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MARK ARMISTEAD CO.
S.O.S. CINEMA SUPPLY CO.
TELEFILM, INC.
FLORMAN & BABB
PANAVISION, INC.
CENTURY PHOTOG. EQUIP.
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GEVAERT CO. OF AMERICA

OUR EXPERIENCE IS YOUR KEY TO *SERVICE & DEPENDABILITY*

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Complete with optical sound reproduction head (or choice of magnetic sound) base plate, amplifier-speaker. For single or double system sound. Easy to handle, no twisting film. An unbeatable combination with the . .

ZEISS MOVISCOP 16mm precision viewer, sharp brilliant 2¼ x 3¼ picture.

Dual Reader, less viewer.....**$195.00**
Zeiss Moviscop viewer.....**89.50**
Special Reader-Viewer combination.....**269.50**

CAMART TIGHTWIND ADAPTER

Winds films smoothly and evenly without cinching or abrasions. Fits only 16mm or 35mm standard rewinds. The only tightwind with ball-bearing roller. With core adapter,

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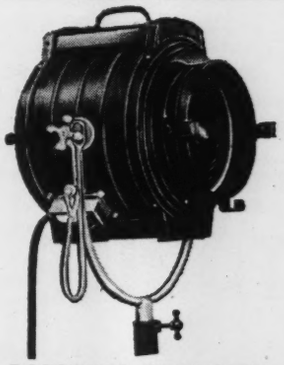

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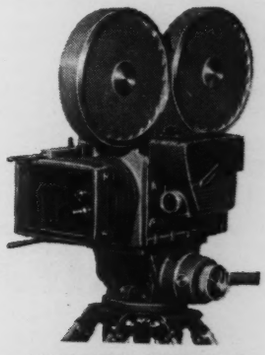

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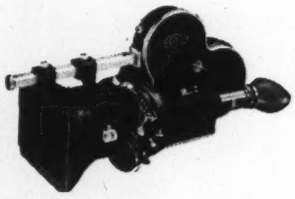

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16mm and 35mm cameras in stock for immediate delivery. Arriflex 16 and 35mm soundproof blimps available. 400' magazines. Synchronous motors. New and used.

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Cleans, conditions, and lubricates your film in one easy operation. Non-inflammable, eliminates waxing, absolutely safe. Ecco Applicator.....**$33.00**
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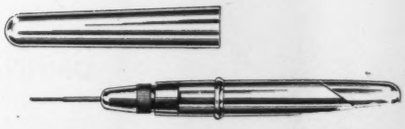

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PHOTOGRAPHIC ASSIGNMENTS

Continued From Page 208

PARAMOUNT

HASKELL BOGGS, "The Bellboy" (Jerry Lewis Prod.; shooting in Miami) with Jerry Lewis and Joan Tabor. Jerry Lewis, director.

ROBERT BURKS, ASC, "The Pleasure of His Company" (Technicolor; Perlberg-Seaton Prod.) with Fred Astaire and Debbie Reynolds. George Seaton, director.

TED SCAIFE, "Tarzan the Magnificent" (Shooting in Nairobi, Africa) with Gordon Scott and Jock Mahoney. Robert Day, director.

LESTER SHORR, ASC, "Bonanza"* (NBC-TV) with Michael Landon and Dan Blocker.

REPUBLIC STUDIOS

CARL GUTHRIE, ASC, "College Confidential" (Albert Zugsmith Prod.) with Steve Allen and Jayne Meadows. Albert Zugsmith, producer-director.

WILLIAM SNYDER, ASC, "Robert Taylor Detectives"* (Four Star Prod.) with Robert Taylor.

EDWARD CRONJAGER, ASC, "Black Saddle"* (Four Star Prods.) with Peter Breck and Russell Johnson.

HOWARD SCHWARTZ, "The Rifleman"* (Four Star Prods.) with Chuck Connors and Johnny Crawford.

CHARLES BURKE, "Johnny Ringo"* (Four Star Prods.) with Don Durant; "Law of the Plainsman"* (Four Star Prods.) with Michael Ansara.

GEORGE DISKANT, ASC, "June Allyson Show"* (Four Star Prods.) with June Allyson.

EMMETT BERGHOLZ, "Death Valley Days"* (Filmaster Prods.)

REVUE STUDIOS

JOHN RUSSELL, ASC, JOHN WARREN, ASC, "Alfred Hitchcock Presents"* (Revue Prods.).

RAY CORY, ASC, "Bachelor Father"* (Bachelor Prods.) with John Forsythe.

WILLIAM SICKNER, ASC, "Overland Trail"* (Revue Prods.).

BENJ. KLINE, ASC, "Wagon Train"* (Revue Prods.) with Ward Bond.

RAY RENNAHAN, ASC, JACK MACKENZIE, ASC, "Laramie"* (Revue Prods.).

JOHN WARREN, ASC, LIONEL LINDON, ASC, "Markham"* (Revue Prods.) with Ray Milland.

ROY FLIN, "Shotgun Slade"* (Revue Prods.).

EMIL HARRIS, "Riverboat"* (Revue Prods.) with Darren McGavin.

IRVING LIPPMAN, "Johnny Midnight"* (Revue Prods.) Commercials* (Revue Prods.).

JACK MACKENZIE, ASC, JOHN RUSSELL, ASC, "The Deputy"* (Revue Prods.) with Henry Fonda.

JOHN RUSSELL, ASC, RAY FLIN, "M Squad"* (Latimer Prods.) with Lee Marvin.

RAY FLIN, NEAL BECKNER, "Coronado 9"* (Revue Prods.).

JOHN RUSSELL, ASC, "Whispering Smith"* (Revue Prods.).

RAY RENNAHAN, ASC, "Wells Fargo" (Overland Prods.) with Dale Robertson .

PAUL IVANO, "Adventures of Art Linkletter"* (Pilot: Revue Prods.).

MACK STENGLER, ASC, "Leave it to Beaver" (Gomalco Prods.) with Barbara Billingsley and Hugh Beaumont. Norman Tokar, director.

TWENTIETH CENTURY-FOX

ELLSWORTH FREDRICKS, ASC, "High Time" (C'Scope & Color) with Bing Crosby, Fabian and Nicole Maurey. Blake Edwards, director.

ALEX PHILLIPS, "The Golden Touch" (Sheegari Corp.; shooting in Mexico) with Richard Basehart and Rex Allen. George Sherman, director.

WINTON HOCH, ASC, "Lost World" (C'Scope & Color; Saratoga Prods.) with Michael Rennie and Jill St. John. Irwin Allen, director.

WILLIAM MELLOR, ASC, "One Foot in Hell" (C'Scope & Color) with Alan Ladd and Don Murray. James B. Clark, director.

ARTHUR ARLING, ASC, "Story of Ruth" (C'Scope & Color: S. G. Engle Prods.) with Elana Eden and Stephen Boyd. Henry Koster, director.

LEO TOVER, ASC, "From the Terrace" (C'Scope & Color: shooting in N.Y.) with Paul Newman and Joanne Woodward. Mark Robson, director.

DANIEL FAPP, ASC, "Let's Make Love" (C'Scope & Color) with Marilyn Monroe and Yves Montand. George Cukor, director.

LLOYD AHERN, ASC, "Adventures in Paradise"* with Gardner McKay and Weaver Levy.

WILFRID CLINE, ASC, "The Tate and Happy Series"*.

WARNER BROS.

HAROLD STINE, ASC, RAY FERNSTROM, ASC

Continued on Page 25

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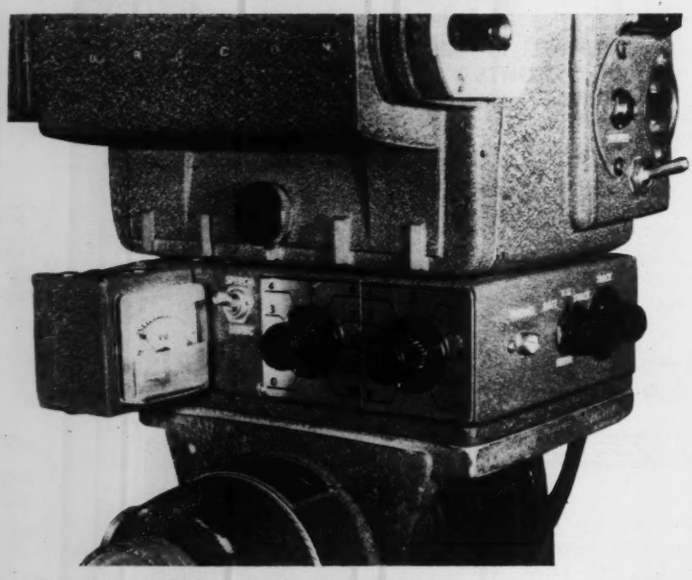

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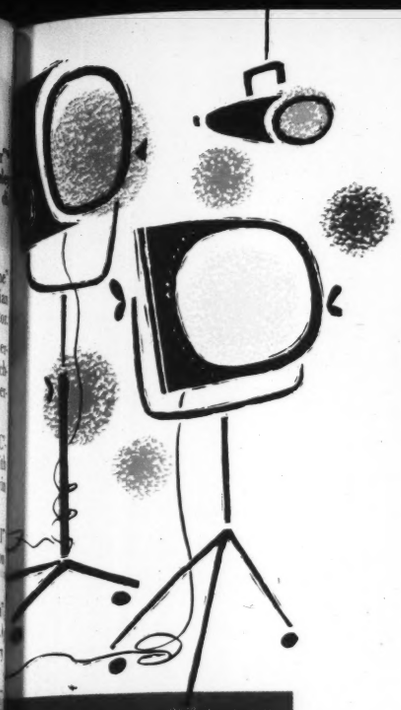

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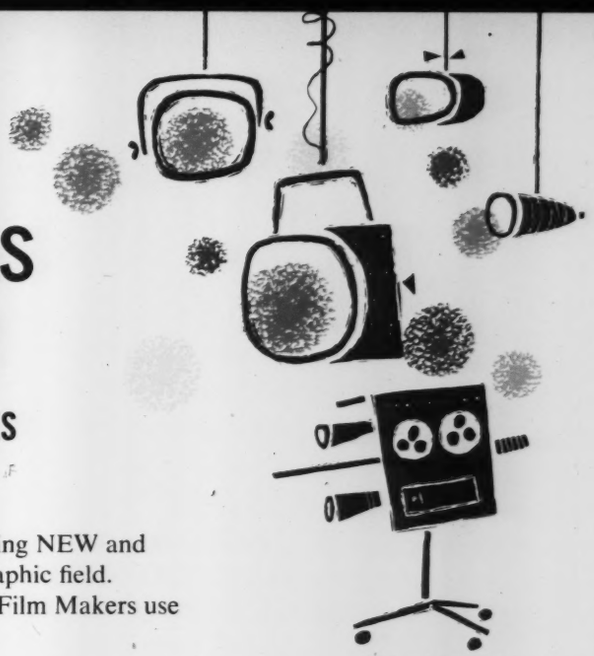

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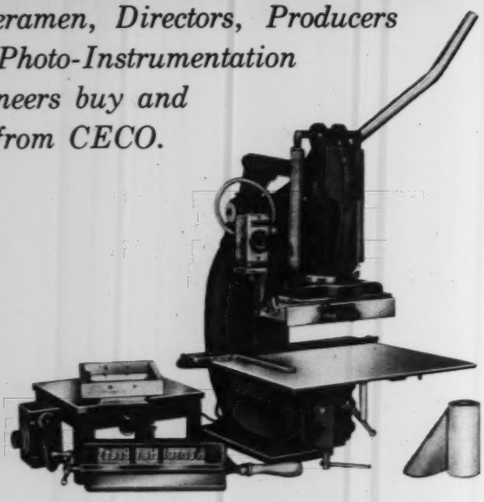

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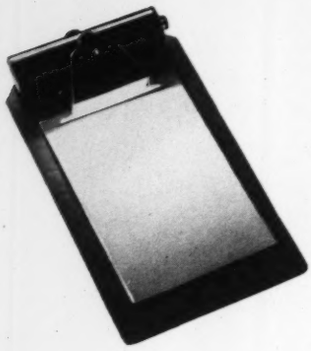

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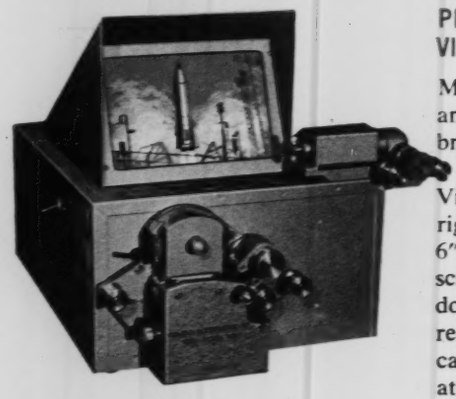

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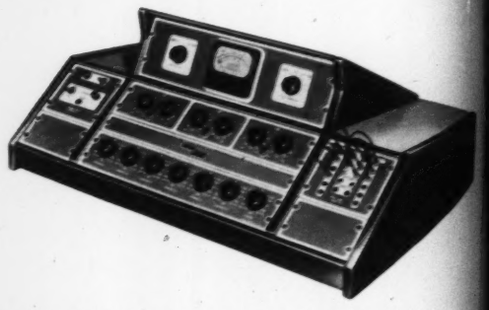

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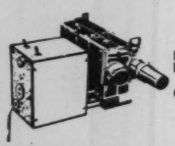

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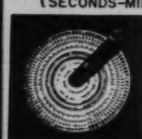
2. MOTOR SWITCH: INTERMITTENT-CONTINUOUS
3. LIGHT SWITCH: INTERMITTENT-CONTINUOUS
4. LIGHT (OR RELAY) OUTLET
5. REMOTE CONTROL INLET (SWITCH OR TIMER)
6. STANDARD TRIPOD THREAD ON BOTTOM
7. CONNECTS WITH CAMERA BY PLASTIC TUBING

ROLAB
PHOTO-SCIENCE LABORATORIES
SANDY HOOK, CONNECTICUT

OTHER ROLAB PRODUCTS: CAMERA TIMERS (INTERVALOMETERS), MICROCINEMA APPARATUS, ETC. (FOR SALE OR RENT).

FAMOUS *Ready-Eddy* FILM COMPUTERS
(SECONDS-MINUTES-FEET-FRAMES ETC.)



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16/35 OR 16

$2.95 $1.95

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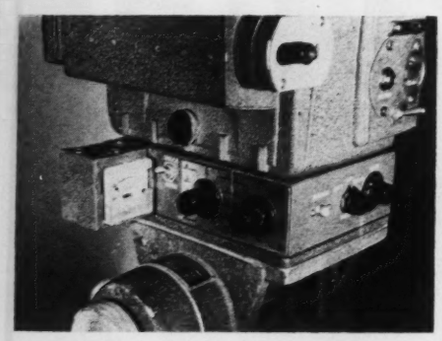
AT YOUR DEALER OR AT READY-EDDY, SANDY HOOK, CONNECTICUT

WHAT'S NEW

in equipment, accessories, services



Auricon Amplifier

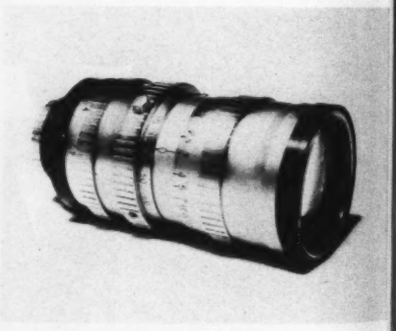
Transist-O-Sound, 851 Eustis Dr., Indianapolis 19, Ind., is marketing a compact, transistorized amplifier-mixer for Auricon cameras that mounts conveniently beneath camera, as pictured. A feature is the illuminated VU meter to facilitate use of equipment for night work. All components are in one case, mounted on the camera, and there are no cables required other than those for AC input and mikes. List price is $325, installed.

8mm Movie Sound Recorder

Paillard, Inc., 100 Sixth Ave., New York 13, N. Y. announces a new magnetic sound unit for recording and playback of sound on striped 8mm film, ready for projection. Called the Sonorizer, equipment operates in conjunction with the Bolex M-8 projector, for which it was originally designed, or with many other 8mm projectors. Complete unit consists of recorder-playback-mixer-amplifier, which is placed beneath the projector as pictured, plus soundhead, speaker microphone and fade-out control. List price is $250.00.

Color-Cloud Filters

Filters to darken skies and provide cloud contrasts with color film or black-and-white are announced by Ednalite Optical Co., Inc., Peekskill, N. Y. Made of Polaroid material, filters eliminate or decrease glare and reflections. A viewer is furnished with each filter through which subject is viewed, and rotated until desired effect is obtained. Photographer then sets filter at corresponding angle on his camera lens. Available in a wide range of sizes, filters list from $9 to $21.

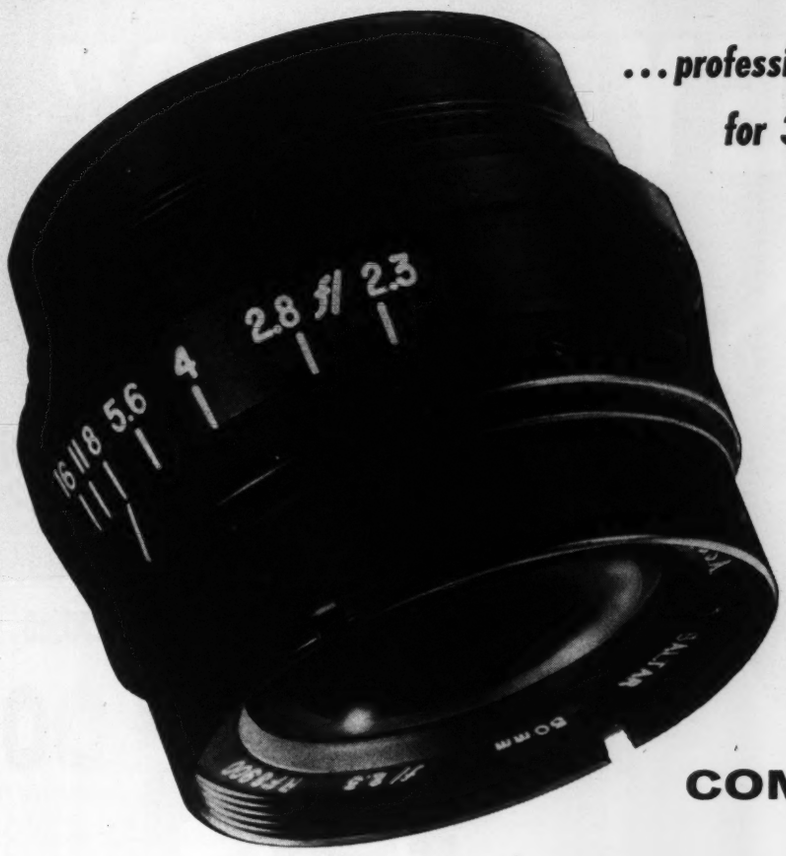


Variable Focus Lens

Traid Corp., 17136 Ventura Blvd., Encino, Calif., has announced its new Twenty-Eight variable focus lens for 16mm cameras. Providing the versatility of telephoto, wide-angle and normal shots, lens affords a range of focal lengths from 20mm to 80mm, with constant iris for the same exposure throughout the focal range. Other fea-

Continued on Page 220

BALTAR



...professional standard for 35 mm and 16 mm cinematography

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TELEVISION
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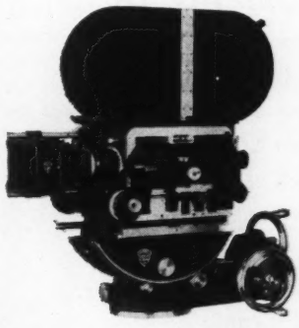
TECHNICAL
COMMERCIAL

More professional footage is filmed with Baltar than with any other lens. It will pay you to keep this in mind on your next important assignment.

Order from your professional camera manufacturer, or WRITE to Bausch & Lomb Optical Co., 30004 Bausch St., Rochester 2, N. Y.



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YOU GET ALL THIS

- 3-Lens Spider Turret
- New Eyemo Motor
- 1" Bell & Howell Lens
- 2" Bell & Howell Lens
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- Motor Mount
- Power Cable
- Hand Crank
- Two 400 ft. Magazines
- Magazine Drive Belt
- Drum-Type Optical Finder with fields for 6 lenses
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For Filter Slots and Critical Focusers. See Optional Accessories.

This is the greatest value ever offered by

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The Bell & Howell Eyemo "Q" is recognized and relied on by professional newsreel photographers as the **standard of the industry,** famous for having recorded history in all parts of the world.

Designed and built for rugged duty, it lasts forever and is one of the most versatile cameras ever made. Speeds of 8, 12, 16, 24, 32 and 48 frames per second. Quick-reading footage counter. Camera holds 100 ft. of film in daylight spools, or 400 ft. with magazine. Has the famous Bell & Howell balance for easy hand-holding. With its accessories, the Eyemo "Q" produces results comparable to a fully equipped Hollywood studio camera.

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A HOLLYCAM EXCLUSIVE!

Your Eyemo "Q" outfit is complete . . . everything you need for shooting professional motion pictures!

OPTIONAL ACCESSORIES

10" Bell & Howell telephoto lens. List $170.00	$ 44.50
Fitted case with room for camera, motor, lenses, film, filters, etc. $79.00 value	19.95
New Jr. or Baby tripod with Vee-grooved legs and friction head	120.00
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Camera alignment gauge. (Rackover) List $75.00	29.95
Camera mount. Pan, tilt and lock. For installation in car or plane window. List $185.00	12.95
New Norwood Super Director lite meter with case	15.95
New S.E.I. Light meter with case	170.00
New Dormitzer portable hi intensity cine light	347.00
32"x32" heavy duty changing bag. List $15.95	4.95
Critical thru-the-lens prismatic focuser, as illustrated, Installed. List $115.00	48.75
Filter slot. Installed. Mfr's list $115.00	49.00
Turret type viewfinder with 1", 2" and 6" objectives. List value $115.00	74.50
Ratchet winding crank. List $13.50	10.95

Some equipment listed is new. **ALL** equipment is **GUARANTEED** by Hollywood Camera Co. to be in good serviceable condition.

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Eyemo "Q" bodies only, or with your choice of lenses and accessories. We also have single lens Eyemos, all Eyemo parts, B & H 2709's, Mitchells, Cine Specials, Miltar, Baltar, Cooke and Kinar lenses. Whatever you need in professional cine equipment, call HOLLYCAM first! Our inventory of cameras, lenses and equipment is the world's largest . . . at the world's lowest prices.

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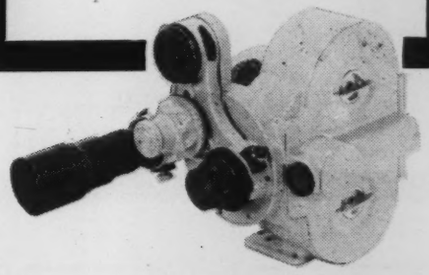
$75.00 Titling and Scene ID unit with backlighted screen and lens. Inserts in lens mount.

100 Ft. Eastman Super-XX film.

Eyemo handle and leather wrist strap.

Leather shoulder strap.



Some materials are from former U.S. Gov't stocks. Equipment not listed as new or reconditioned is used. All prices f.o.b. our warehouse.

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All equipment is guaranteed to be as advertised. Check with order please, or 25% deposit, balance on delivery. Purchase orders welcomed from D&B rated firms. Minimum order $5.00.

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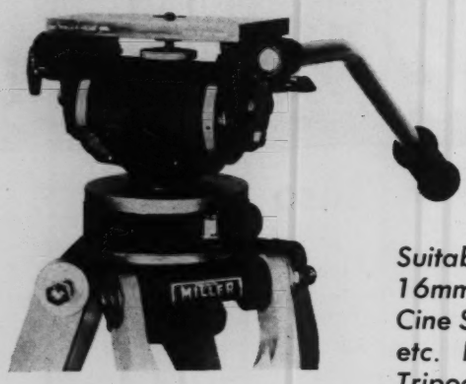

Miller
FLUID ACTION TRIPOD HEAD

Suitable for Arriflex cameras (both 16mm and 35mm), Auricon-400, Cine Special, Medium TV Cameras, etc. Fits Miller-Pro Grooved-Leg Tripod, Pro-Jr., S.O.S., and similar tripods. No adapters necessary.

- Standard ¼" or ⅜" mounting thread.
- Quick-action camera lock.
- Two quick-action handle holders—handle may be used on either side, front or back.
- Two control screws on tilt unit for independent control of tension or lock.
- Head finished in high-quality baked enamel.
- Pan and tilt units factory-sealed with special stabilized high-viscosity silicone fluid.
- Neoprene seals used throughout.
- Single control for tension or lock of pan unit.
- Accurate spirit level.
- Height 5½". Weight 8 lbs.

ONLY **$299.50**

Miller equipment is precision-built of highest quality materials; every replacement part is available . . . Miller Equipment is used throughout the world by leading photographers, film and television studios . . . Miller is the World's foremost manufacturer of Fluid Action Heads.

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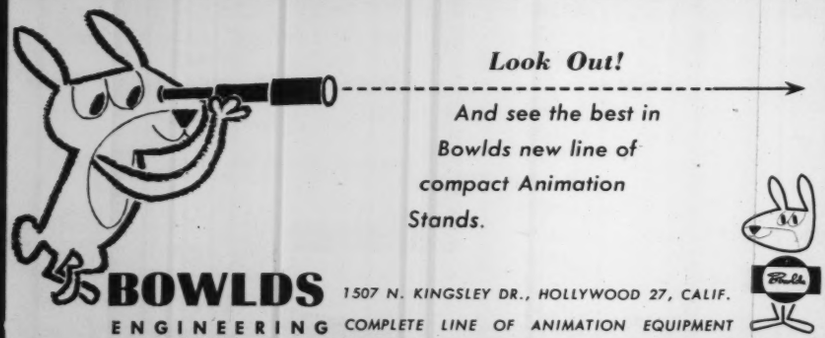

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4-Wheel $1,400.00

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CAMERA EQUIPMENT CO., INC.

315 West 43rd Street, New York 36, N. Y.

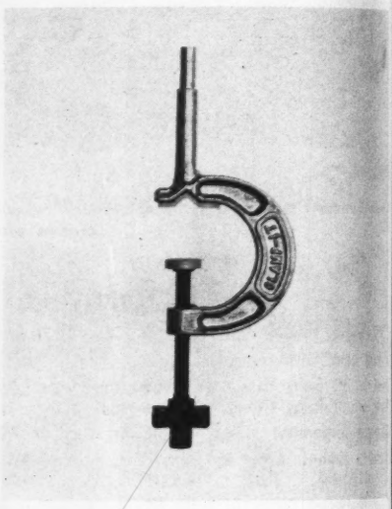
WHAT'S NEW

Continued From Page 216

tures include convenient control lever for zoom operation, easy-to-read focusing scale, click stops from f/2.5 to f/22, and standard C-mount. List price is $335.00.

Mood Music Catalog

A new catalogue of background music available for motion pictures, television and video-tape is announced by Thomas J. Valentino, Inc., 150 West 46th St., New York 36, N. Y. Company's complete Major Mood Music Library consists of 140 records. All compositions are original and none are in public domain. Copies of catalog are free to qualified users.



Set Lighting Utility Clamp

A novel utility clamp called "Clamp-It" designed to facilitate use of portable lamps, spots, etc., in relatively inaccessible places is announced by the Keljic Co., 6000 Pleasant Ave., St. Paul 2, Minn. Jaws of one-piece device open to 2-inches, and unit clamps to light stands, rafters, doors, furniture, tripod legs, etc. It will hold a 10-lb. Keg Lite or any studio reflector with ⅜" or ½" standard fittings. Made of sturdy aluminum and precision machined, 7-ounce unit lists for $6.50.

Microphone Booms

Cinekad Engineering Co., 763 10th Ave., New York 19, offers a line of microphone booms for use in studio or location. Booms extends from 6 to 14 feet, have five-foot stand, and may easily be carried in one's car.

there's a **SYSTEM** * to success

and the versatile

ARRIFLEX® 16

THE CHOICE OF PROFESSIONALS ALL OVER THE WORLD

has got it!

The Arriflex 16 is a system camera because it has been designed from its inception to perform as a hand camera, studio and sound camera.

Skillful planning, meticulous craftsmanship and superb engineering skills have made this versatile motion-picture camera and its accessories the choice of professionals all over the world.

There's no secret about the Arriflex 16 "system" for success nor the names of the thousands who are making profitable use of it. Write for literature that details it all.

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* **IT'S A HAND CAMERA!**

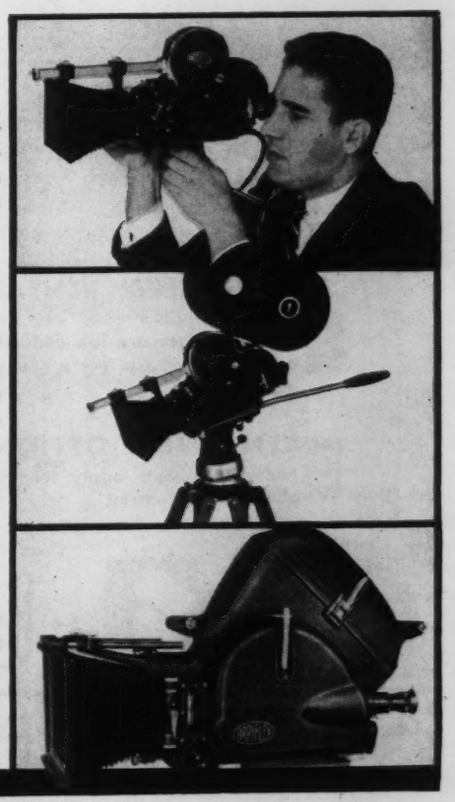
Weighing only 6½ lbs., the compact Arriflex 16 is a pleasure to carry, set-up and operate. And no other hand camera has all its professional features!

* **IT'S A STUDIO CAMERA!**

The simple addition of component Arri accessories (400 ft. magazine, synchronous motor and tripod) quickly transforms the versatile Arriflex 16 into an ideal studio camera. Its easy set-up and take-down features makes it a perfect "one man" camera.

* **IT'S A SOUND CAMERA!**

By placing the camera and magazine in the Arri 16 Blimp it is a full-fledged sound camera with all important camera features, like thru-the-lens-focusing, operated from the outside.



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- EDITING
- ANIMATION
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IMMEDIATE Rental service at Behrend's . . . from a changing bag to an Arriflex Camera!

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No maintenance costs! No tie-up of Capital! Rental charges are tax deductible as an operating expense! You are protected from obsolete equipment!

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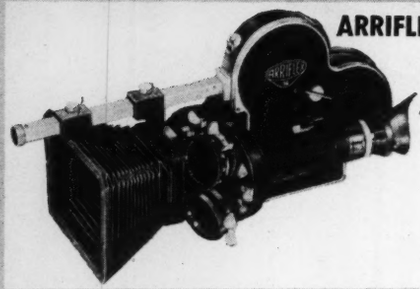
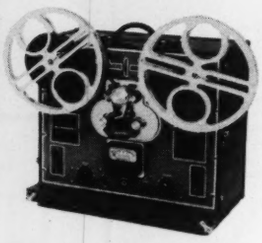
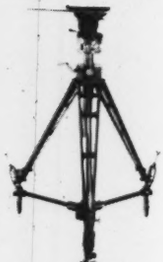
Rental payments apply IN FULL toward purchase of equipment!



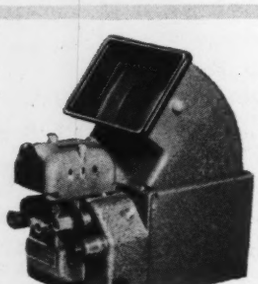
ARRIFLEX CAMERAS
WE STOCK AND SERVICE ALL ARRIFLEX CAMERAS AND ACCESSORIES



MAGNASYNC RECORDERS
BEHREND CINE CORP. IS MIDWEST DISTRIBUTOR FOR SALES AND SERVICE OF MAGNASYNC SOUND EQUIPMENT



CINEX TRIPOD
A Behrend Exclusive! Heavy-duty elevator tripod with specially designed crank handle enables one man to raise or lower tripod even with heavy duty camera attached.
Tripod and Head **$800.00**



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A Behrend Special! Extremely Bright! Extra Sharp! Large Size Image! Easy Marking! Carefully engineered to be the finest!
EV-3—Left to Right Operation **$135.00**
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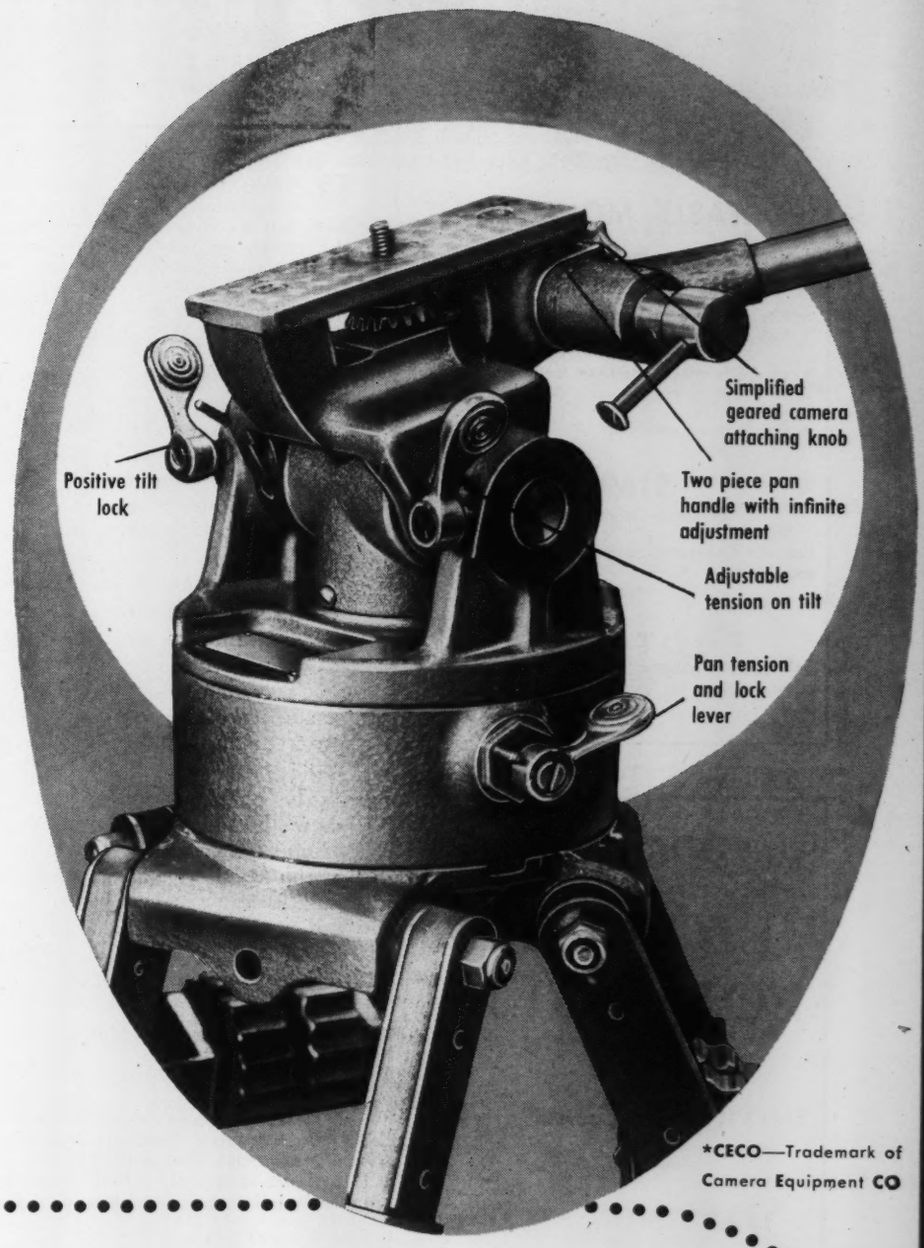
You'd know it blindfolded — that

CECO'S* NEW PRO JUNIOR FLUID HEAD

is the undisputed performance champ

It's smoother, more rugged, better engineered, guaranteed leak-proof and locks without "diving"


Positive tilt lock
Simplified geared camera attaching knob
Two piece pan handle with infinite adjustment
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Pan tension and lock lever

Our engineers were not concerned with building a "popular" model at a price. Their objective — to design a Fluid Head that cameramen dream about.

CECO's new Pro Junior Fluid Head is the acknowledged master. Its *worth* is being proved every day — in studios and on location, in tropical climates and in the frozen North.

You'll find yourself getting smoother pan and tilt shots, with smooth-as-silk maneuverability when you use the incomparable CECO FLUID HEAD. Works under any conditions with complete versatility.

If a Model T and a Caddy cost the same—is there any doubt which you'd buy—in this case, CECO'S PRO JUNIOR FLUID HEAD! Your professional status entitles you to the best. Come in. See it, try it and judge for yourself if we've overstated the facts. Can you make it today?

*CECO—Trademark of Camera Equipment CO

ONLY CECO'S FLUID HEAD HAS THESE EXCLUSIVE FEATURES:

1. Silicone Molecular fluid is in one *horizontal* chamber. A rotating disc keeps the fluid equally distributed on the internal bearing surface during both panning and tilt operations.
2. Powerful, positive locking control keeps the camera in a fixed position indefinitely, eliminating the hazard of the camera "diving" when unattended.
3. Fits *all* Professional Junior Tripods (Baby, Hi-Hat or regular) *without* the use of special adapters.
4. Geared camera tie-down knob simplifies attaching of camera to the head. No tools required.
5. Two-place pan handle with infinite angle adjustment.
6. Guaranteed leak-proof. All shafts have double end "O" rings. The pan has an extra trap ring to prevent fluid, which might have escaped the large "O" ring, from leaking.
7. Pan and tilt tension control levers are *substantial* — not the itty-bitty screw gimmicks that fail when you breathe on them.
8. The only fluid head which is ideal for use with Arriflex 16mm & 35mm, Bell & Howell Eyemo *and* Filmo (with or without magazine and motor drives), Maurer 16mm, Auricon Cine-Voice and Conversion, Cine-Kodak Special and the Bolex Cameras.

Operating temperature range: 20° below zero to 120° F. Forward tilt: 90°. Backward tilt: 50°. Total weight: 8¼ lbs. Additional mechanical drag can be imposed on both pan & tilt by convenient lever locks. All shafts run on bronze bearings, and shoulder on hardened steel washers, eliminating freeze-ups.

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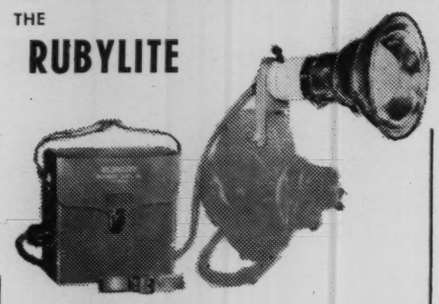

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- Smooth, even 3400° K light in wide-angle beam. No glaring hot spots.
- Fits any camera. No tools needed, no holes to drill.
- Long-life nickel-cadmium battery with built-in charger. Weighs only 5 lbs.
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Rubylite Converters run Auricon Cameras from same battery. Write for complete information.

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WALTER STRENGE'S

QUESTIONS & ANSWERS

Need advice on a picture making problem? Your questions are invited and will be answered by mail. Questions and answers considered of general interest will appear in this column each month.

Q When producing commercials for integration with TV program films, how can we insure that the negative or the print, or both, of the commercial will be compatible in density, contrast and overall picture quality with the program film?—*G.A.*

Answer: Where the commercial and the TV program film are both processed by the same laboratory, the matching of overall quality becomes more or less automatic. Where the commercial cannot be processed by the same lab that processes and prints the program film, it is advisable to obtain a few specimen sections of negative trims from representative scenes from the program film, which may be joined to the negative of the commercial. In this way, a check print can be made consisting of the commercial and the program film clips—both on the same roll.

The check print thus made should show that the commercial requires a printer light within two or three points of the sample negatives, and show the same contrast. Since there is no standard for density and contrast for original and duplicate negatives, it becomes necessary to provide a controlled reference as a guide for the laboratory technicians.

Q What inks are used by professionals in tracing animation drawings onto acetate cels? Are they available as standard art material? Also, what type pens are used for this work?—*L.A.B.*

Answer: Recommended inks for tracing animation drawings onto cels are: Artone acetate black ink, and Higgins India general drawing ink. The most dependable pens for inking purposes are Gillot No. 290, and Hunt No. 100. All of the above materials can generally be found in artist's supply houses.

Q What is the difference in shooting color for TV as compared with shooting it for motion picture theatre exhibition?—*M.M.H.*

Answer: Mainly the way colors reproduce in the black-and-white medium. The difference between shooting Eastman Color film for TV, compared with motion picture exhibition arises from the fact that almost every color telecast is also televised as a black-and-white program.

Insofar as the color photography itself is concerned, a color film that will project satisfactorily in theatres will also be satisfactory for color TV. Trouble may be encountered in its TV use if the monochromatic or gray scale values of the colors used are so nearly alike that the desirable separation or contrast is lost in black-and-white reception.

For example, blue letters against a red background are plainly visible in the color medium, since these two colors are easily distinguishable. In black-and-white reproduction, however, the same combination might result in a uniform gray, as the monochromatic value of the red equals that of the blue. In the production of color films for TV, it is therefore important to bear this fact in mind when planning set colors, decorations, costumes, inserts, etc.

Q I am preparing to make a film, using Ektachrome Commercial, and using two different cameras: a Cine Special with Ektar lenses and an Arriflex 16 with Schneider lenses. Tests filmed with both cameras show that the Schneider lenses give color results considerably bluer than that produced by the Ektars. Can this be corrected in printing?—*E.P.*

Answer: Most laboratories offer scene-to-scene color correction in Kodachrome printing, and thus should be able to compensate for color differences when making prints from your Ektachrome Commercial.

However, if possible, have the lens or lenses producing the bluish cast corrected, or use compensating filters on them when shooting.

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THE BIRNS & SAWYER TRACKING FINDER FOR ARRI CAMERA

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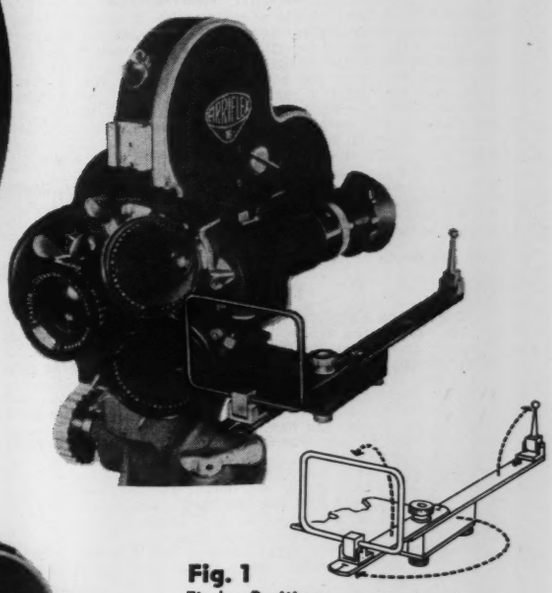

Fig. 1
Finder Position
For 50mm Lens

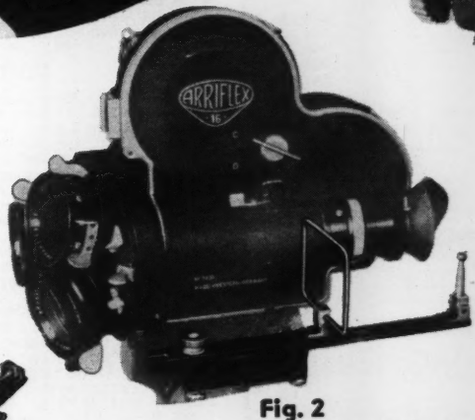

Fig. 2
Front Frame Swings Back
Serves as 25mm Finder

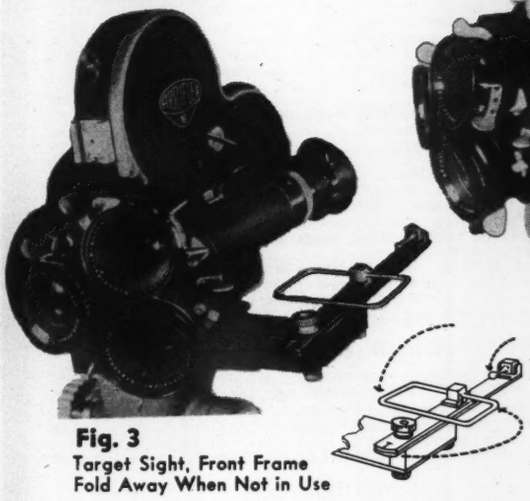

Fig. 3
Target Sight, Front Frame
Fold Away When Not in Use

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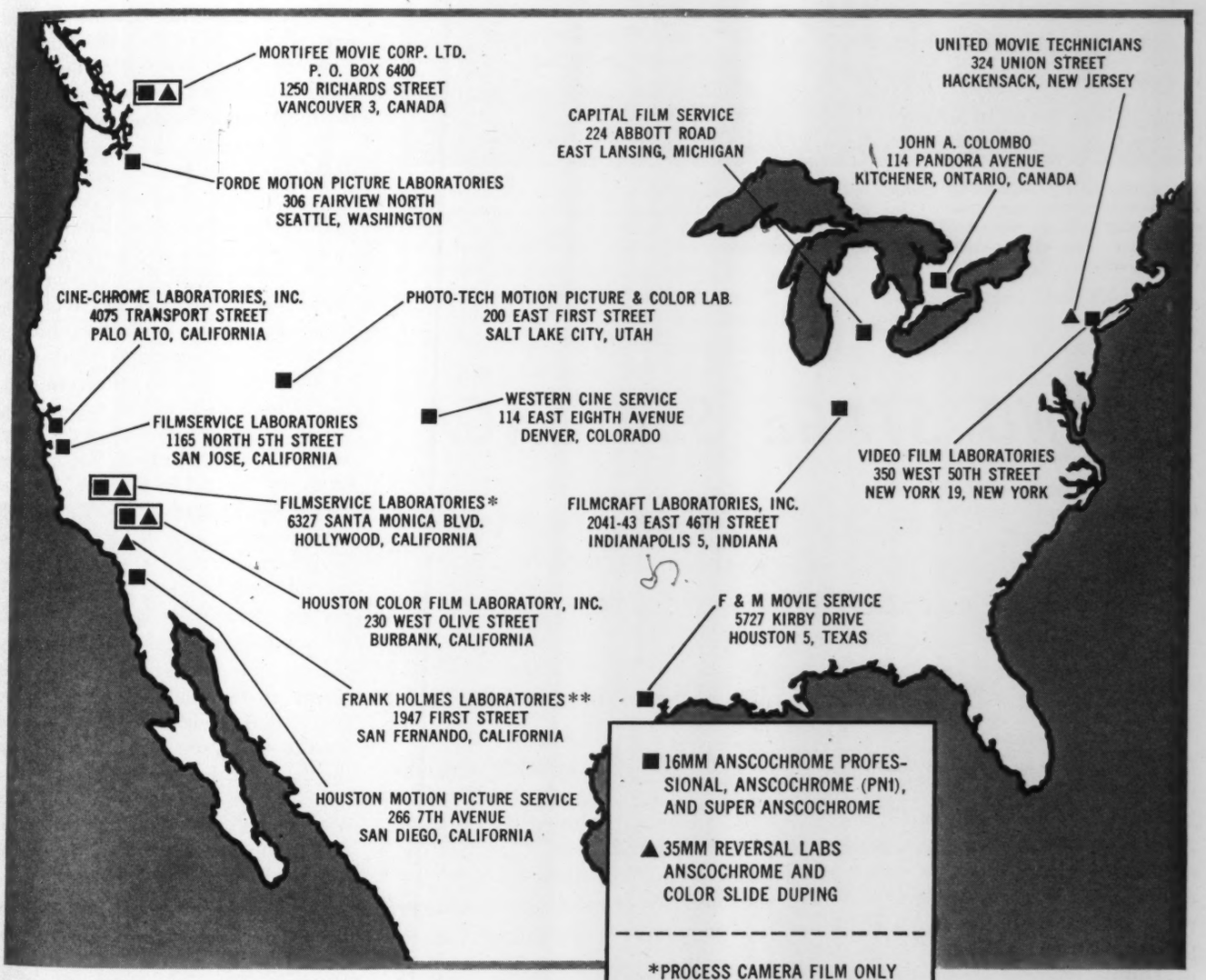

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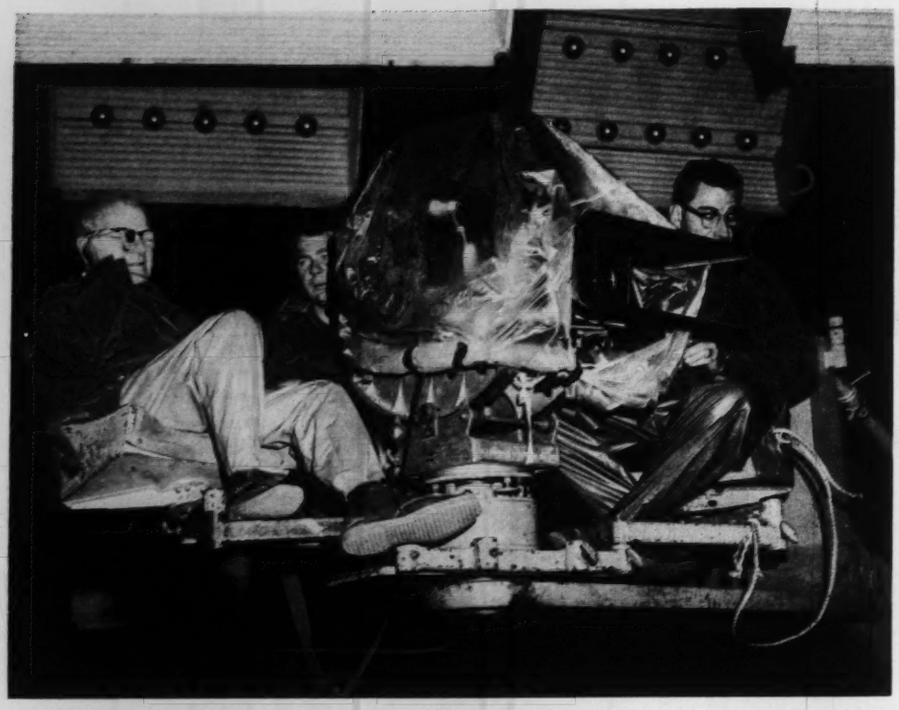


THE AUTHOR (left), aided by his operator and assistant, line up a high-angle shot on the sound stage for "Wreck Of The Mary Deare." In this manner, scenes like those pictured on opposite page were filmed on a set representing a small area of a storm-swept British Channel. Visible in background are some of the skylight units used for set illumination. Plastic cover kept camera dry during shooting.

SOUND STAGE SEA SAGA

How the science of special visual effects made it possible to shoot within the studio all the dramatic storm and ship wreck scenes for MGM's "Wreck Of The Mary Deare."

By JOSEPH RUTTENBERG, A.S.C.

UNLIKE THE AVERAGE Hollywood motion picture, MGM's "Wreck of the Mary Deare" was essentially a photographic problem production. Being a saga of the sea, much of its important action takes place at sea, during a violent storm. Obviously it would be impractical if not impossible to photograph this action on an actual ship in an actual storm. The most desirable photography could best be accomplished under the controls afforded on studio sound stage or lot, and where special effects could be utilized most effectively to achieve a degree of realism that would not otherwise be obtainable.

And that is the way the picture was made.

With effects making up a substantial part of the production, A. Arnold Gillespie, head of the studio's Special Visual Effects department, played a prominent role both in planning and in the production of "Wreck of the Mary Deare." After the script was okayed, Gillespie and his staff proceeded to blueprint the effects required and to supervise what effects construction would be involved—which was substantial; more than has been involved in any major film production in Hollywood in a long time.

Special Visual Effects at MGM studio embraces five separate categories: miniatures, full-scale effects, rear projection process, matte paintings, and optical effects. Gillespie supervises the first three. Roughly, the special effects for this picture comprised two operations: shooting the scenes involving Cooper and Heston aboard the Mary Deare, which were enacted in, on and around a full-scale mockup of a section of the Mary Deare constructed in the pool on MGM's Stage 30, and the numerous shots of the storm-tossed Mary Deare floundering on the rocks known to English Channel mariners as the "Minkies." The latter were done in miniature on the studio's "lake" on Lot 3. Cinematographer Harold E. Wellman photographed the miniatures, and I photographed the rest of the picture including the effects scenes involving the mock-up of the ship on stage 30.

Much of the success of the effects photography in this picture is due to the meticulous care with which these filming operations were planned in advance by Gillespie and his staff. This is particularly true of the miniatures shot in the lake on the back lot. In planning this phase of the production, Gillespie prepared large diagrams which detailed the action of the miniature of the Mary Deare as it was to move through the turbulent sea and onto the craggy and forboding Minkies. Each camera setup was plotted in advance, based on the coverage, depth of field, etc., of the camera lenses, and clearly indicated on the diagram. Here also were marked the positions around the perimeter of the lake where the various effects devices were to be set up—the wave machines, high-powered wind machines to churn up the water, and the elevated water tanks with chutes that would send tons of water cascading down into the lake at the press of a button to amplify the turbulence of the otherwise smooth lake's surface in simulation of storm-swept waters of the English Channel.

The size of the miniature Mary Deare had to be carefully determined with respect to the size of the lake and the ratio of wave movement that could be created on the surface of a shallow, still-water reservoir. Because there would be both day and night scenes, it would be necessary to paint the backing erected at the far end of the lake for day shots, make the shots, then repaint the backing for the night shots.

For the latter, the cloud pattern was changed, and the overall tone of the backing was greatly subdued for the desired night effect.

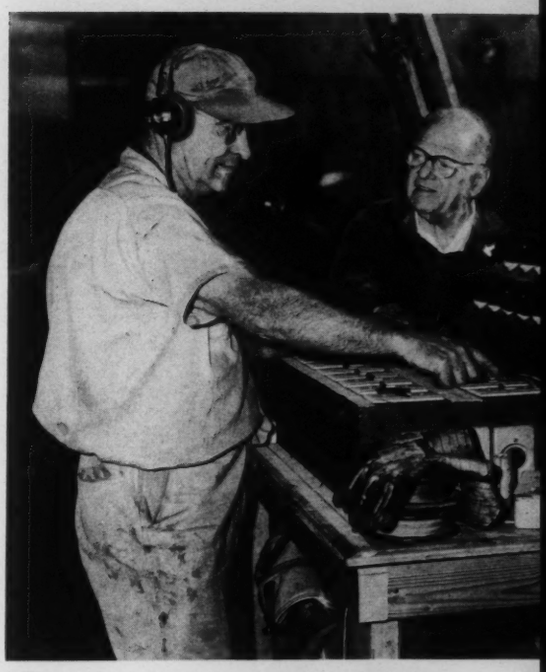
When the lake was completely transformed, the scene was highly realistic when viewed through a finder. There was the backdrop painting of a blue, cloud-flecked sky and jutting out of the water some distance before it was a most realistic miniature formation of the Minkies. Idling nearby was the miniature of the Mary Deare, an excellent example of model craftsmanship 26 feet in length, built on a scale of ¾-inch to 1 foot. There also was a second miniature, a partial section of the boat, which was constructed on a scale 1½-inches to 1 foot, and which was used for a number of special shots at closer range.

To agitate the lake surface in simulation of a turbulent sea, four wave machines, two large paddle wheels and two dump tanks were erected at one side of the lake. Nine powerful wind machines were placed adjacent to this equipment to provide the high winds and water turbulence that would be required to simulate the effect of a storm at sea. Four of these were the propellors and Liberty motors of former World War I fighter planes—part of the studio's vast prop inventory.

Photos on next page show some of the activity typical in a day's shooting of the miniature scenes on lot 3. For most shots, cinematographer Wellman had the Mitchell cameras mounted within shallow tanks that were floated on surface of the lake, which averages about 30 inches in depth. Besides affording advantages in mobility and ease in making pan and tracking shots, the shallow tanks permitted mounting the cameras close to the water surface —essential for proper point-of-view for the miniature shots. Floating the cameras also added considerably to realism of the scenes.

Photographing miniatures and miniature action requires shooting at increased camera speeds so that the action of moving elements in scenes will appear as realistic as possible on the screen. If there is too much disparity here, the miniature scene will give itself away and sharply reduce the picture's impact. This is an extremely vital consideration in the staging and photographing of all miniatures.

Gillespie explained that there is no established rule in the matter of camera speeds for photographing miniature shots of this type. Much depends on the action, scale of the miniatures, and is based mostly on past experience, he says. In shooting the Mary Deare action in the miniature setting of the Minkies, cinematographer Wellman never worked higher than four times 24 fps, nor under 2½ times 24 fps. Both day and night shots were photographed in the daytime, with the 328-ft. by 60-ft. sky backing being changed as required.



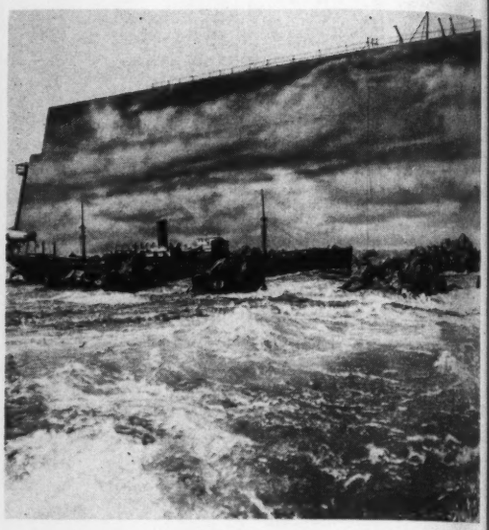
TECHNICIAN (left) explains operation of switch panel to cinematographer Ruttenberg. Panel was used to signal operators of the numerous storm effects devices on sound stage during shooting.

Continued on Next Page

REAL SALVAGE BOAT was used in staging this dramatic action shot in the shallow pool of MGM sound stage, and water given aspect of a stormy sea by means of unique effects devices.

ONE OF THE MANY realistic scenes shot on MGM's Stage 30 for "Wreck Of The Mary Deare." Ship section is full-scale mock-up erected on powerful motor-driven rocker in pool of the stage.

REMARKABLE REALISM, both in the boat miniature and in the stormy sea effects, are seen in this frame enlargement from scene in "Wreck Of The Mary Deare."



ACTUAL SCENE of boat miniature moving through miniature set of the "Minkies" in lake on MGM's Lot 3. Realistic storm effect on water was created by various effects devices set up around perimeter of lake.

Few people, except seasoned mariners, have experienced the fury of the sea and wind and rain from the deck of a storm-tossed vessel. But it is brought to the screen with utmost realism in scenes for "Mary Deare" which we photographed on stage 30—thanks to the science of full-scale special effects which enabled us to photograph scenes of action in simulated storm and high seas without getting our feet wet.

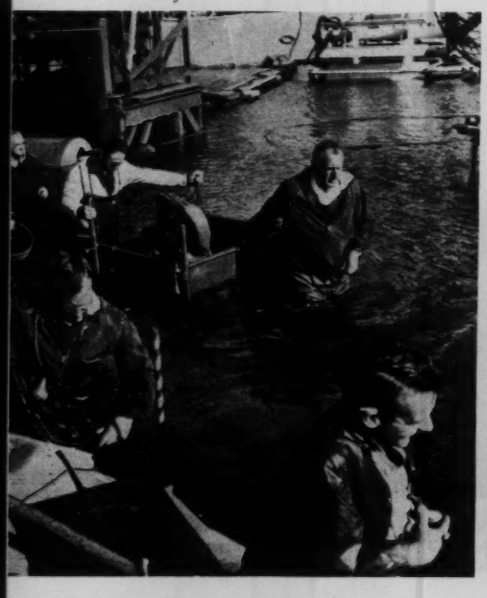
Beneath the portable flooring of Stage 30 is a pool 90 by 90 feet in size and 10 feet deep. It was here that the full-scale section of the Mary Deare was erected, supported on a giant rocking device through which it was given realistic motion in a "sea" churned up by wave machines, wind machines, and water tanks similar to those used on the lake on Lot 3. Here, also, was floated the Seawitch, a full-scale salvage boat brought to the studio from the nearby port of San Pedro.

It was here that we photographed the scenes showing Charlton Heston, captain of the salvage boat, boarding the Mary Deare at the height of a storm, and of the Seawitch maneuvering close to the larger vessel in an attempt to take off Heston before he decides to remain aboard and ride out the storm with Gary Cooper.

For many of these scenes, a platform for the camera and crew was suspended

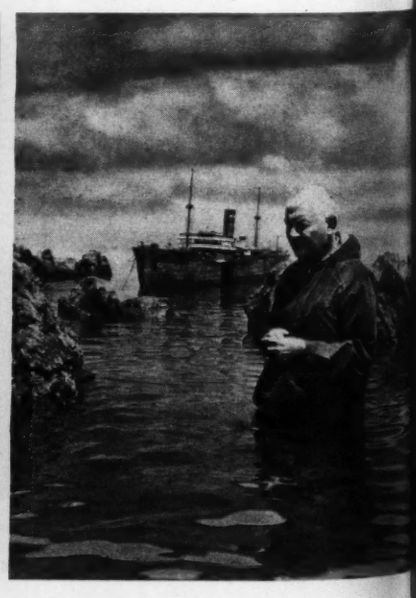
Continued on Page 252

MITCHELL CAMERAS, mounted in floating metal scows, are moved to position to shoot miniature scenes on lake.



TECHNICIANS, waist-deep in MGM's miniature "ocean" move scale model of the Mary Deare into position for next scene.

DIRECTING the special effects is A. Arnold Gillespie, MGM's Special Visual Effects expert for past 37 years.



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SHOOTING ONE OF the many night scenes for the "miracle" sequence for "La Dolce Vita." Cinematographer Otello Martelli's camera is mounted high on boom in right background, while gathered around perimeter of scene are both spectators and some of the extras which the scene required. More than two months were spent in filming the night scenes for the picture.

Filming "La Dolce Vita" In Black-and-white And Wide-screen

Production filmed in Rome reveals some interesting techniques employed by Italian cinematographer Otello Martelli.

By LIBERO GRANDI
Rome, Italy

"LA DOLCE VITA," the wide-screen production directed in Italy recently by Federico Fellini, reveals a photographic technique so closely integrated with the subject matter of the story that it is almost impossible to discuss them separately. Cinematographer Otello Martelli, an old colleague of Fellini's (the two collaborated previousy on the award-winning productions, "La Strada" and "Le Notti Di Cabiria"), directed the photography of "La Dolce Vita." Foregoing many of the established photographic rules, Martelli expresses in a key-tone all the various characters and events taking place in the film itself. His choice of lenses is often unique, too. Martelli used 75mm, 100mm, and 150mm long-focus lenses for closeups and two-shots in place of the 50mm lens generally used for making similar shots in CinemaScope.

Director Fellini wanted to give the story psychological depth by deliberately putting out of focus the middle and the background of many scenes, rather than use the pan-focus system which would have revealed the scenes in full depth. Also, when making pans and traveling shots in close-up, Fellini preferred the results of a 75mm lens — even though cinematographer Martelli was apprehensive of some audience reaction that would result from the disturbing effect of the images virtually dancing before one's eyes on the screen. The result, however, turned out most satisfactory.

Where there are shots with dialogue between two actors (one in C.U. and the other in the foreground) the depth of field is quite limited because of the long focus lenses used; the focusing operation (during shooting) had to follow each actor in turn very carefully, throwing out of focus the actor who had just finished speaking and bringing the other into sharp focus. An example is the dialogue scene between Steiner and Marcello at Steiner's house — the technique underscores their hopeless isolation.

The hazy background against which the actors play the sequence further points up their solitude—their incapability of reaching a common ground. Remarking on this, Martelli said: "Director Fellini has given the film individual style by deliberately distorting the characters and their surroundings, and also by their clear-cut figures.

A notable effect is the pictorial beauty of the dawn scenes

in "La Dolce Vita." Rather than marking the beginning, they symbolize an ending. Here the photography, in varying shades of gray, is cold and unemotional. Then as dawn breaks, and Anita Ekberg and Marcello Mastroianni are seen wading in the Fountain of Trevi, they awaken to reality.

The dawn effect following the "miracle" sequence, somber in its photographic tone, exposes the disillusionment and misery that has overcome the hysterical crowd that had waited vainly through the night for the miracle to take place. Later, a dawn effect closes the final scene of a sequence depicting a night of dissipation and orgies by the disappointed people. Here the strong contrast of gray against the clear-cut figures dressed in black and white serve as a key-tone for the composition of the scenes. Then, when a young girl appears—symbolizing a last tentative hope—the lighting in the scene becomes a little brighter.

Many of the principal night exteriors covered large areas. To light them, extensive equipment was required. For the "miracle" sequence, forty 10,000-watt, thirty 5,000-watt and seven "Brute" lighting units provided the illumination.

Continued on Page 256

ITALIAN CINEMATOGRAPHER Otello Martelli directs the placement of light on Anita Ekberg, star of "La Dolce Vita," in one of the many studio interiors prepared for the picture.

SIMILARITIES AND DIFFERENCES IN 16mm AND 35mm B&W PRINTING

Some of the things the independent producer should know before planning the photography and processing of his films.

THERE ARE MORE choices and more complications in lab color work than in processing and printing black-and-white film; but the latter also involves various procedures and choices, and there *can* be a wide variation in the quality of the final print, depending on the methods used, according to an article in the February, 1960 issue of *Rewind*, General Film Laboratories monthly publication.

In discussing 35mm black-and-white, the article points out that, of the negative footage exposed in the camera, only the good takes are printed as "dailies" in controlled professional practice. Then after the dailies are cut and edited into an "edited workprint" the original negative is conformed for printing. Those scenes which are to be joined by an optical effect go through a separate printing process to produce a negative dupe section incorporating the effect, which is cut into the main body of the edited original negative. A fine-grain positive print will be made for protection, to be held as a stand-by and will be used only in case of damage to the original negative. But release printing normally will be from the edited camera negative.

When a very large number of prints are to be had, or if the same original negative scenes are to be utilized for other versions or purposes, a printing dupe negative will be made from the master positive, and release printing will be from the dupe.

Sixteen mm prints from 35mm productions are provided either by reduction from 35mm negative or contact-printed from 16mm reduction negative. If the former, the 16mm release prints will be reduced in printing, individually, from the 35mm edited camera or dupe negative—using an optical reduction printer. If the latter, a 16mm reduction dupe negative will be made from a 35mm master positive, also on an optical reduction printer, and the 16mm release prints contact-printed.

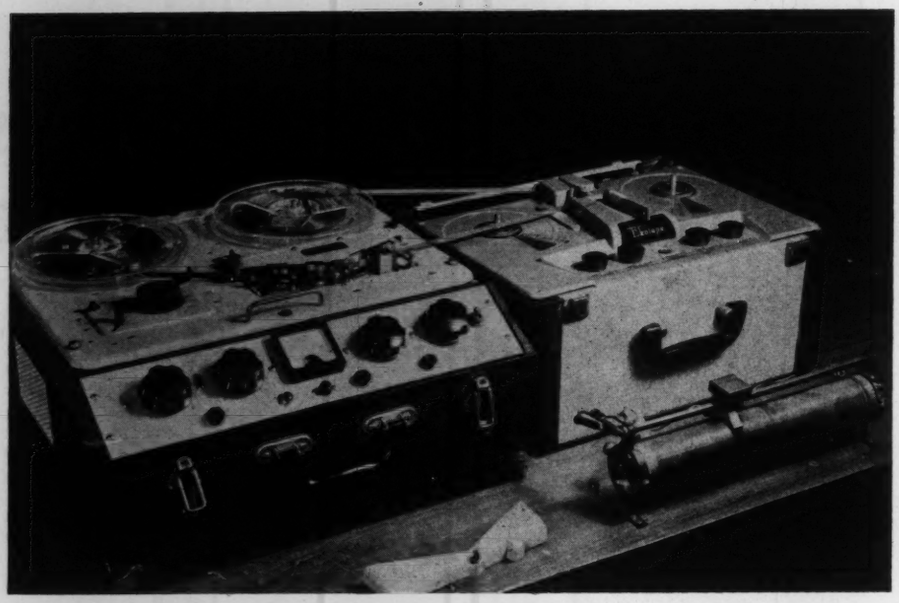
Which method results in the better quality? For the sharper image, and the least build-up of contrast—individual reduction of each print. However, each pass through the printer subjects the 35mm negative to the normal hazards of step-printing, and in the 16mm print the optical printing process clearly shows up any scratches or other blemishes in the 35mm negative.

Use of the 35/32mm printing method results in noticeable improvements in the 16mm *contact* print, bringing its quality very close to that of the reduction print, and eliminating the hazards of running the 35mm negative for each release printing. The bulk of today's 16mm printing from 35mm originals is contact from a reduction negative, the *Rewind* article points out.

Now, what about 16mm? Can 16mm black-and-white production be handled in the same manner, with similar material?

Both theoretically and actually, yes. 16mm can be—and is—shot on negative and handled much the same as 35mm. But, 16mm is not simply a cut-down 35mm film, and the printing results are not the same. 16mm film has its own emulsion, its own characteristics, plus certain limitations which are inherent in all photographic film.

Continued on Page 250



ARRANGEMENT of two half-track magnetic recorders for simultaneous recording or playback of top and bottom tracks of tape. Function of capstan of the Ferrograph recorder (left) has been voided by lifting pressure roller from tape. Rheostat (right foreground) controls speed of Ekotape machine. Note reverse threading of tape through the latter.

A Synchronous Quarter-inch Tape System For Film Sound Recording

— PART 2 —

How integrated sync control signal plays vital role in re-recording with the magnetic tape set-up described in author's preceding article.

By GILBERT M. GALLOWAY

Leonard Theological College, Jabalpur, M. P., India

IN THE INITIAL article in this series, which appeared in the February issue, the author described a synchronous quarter-inch tape system for film sound recording. A salient point in the system is the sync control signal which is recorded with the sound on the same track. The method of operation, of recording, and of utilizing the control track was explained. In this second article of the series, we shall deal with the procedures of re-recording with the same equipment set-up.

Having come this far in the system, one might feel that re-recording procedures would turn the system into a really hopeless Rube Goldberg contraption. But surpringly enough the system gets simpler at this stage!

First it should be pointed out that one playback track and the final mixed track are automatically synchronized by merely re-recording the low-frequency control track from the playback track onto the mixed track. At the same time, this signal is also fed to the horizontal plates of the oscilliscope; thus other signals can be compared with it when they are connected to the vertical plates. For example, the signal from the narration track may be used for the horizontal plates and recording onto the mixed track, while signals from a projector and a music track may be fed through an electronic switch to the vertical plates of the oscilliscope and synchronized, thus establishing sync between picture track, 2 playback tracks and a final mixed track by controlling the speed of the projector and one playback track. However, this arrangement can be much improved.

Something of an innovation for "documentary re-recording" has been invented for this system through necessity. During re-recording sessions for a recent documentary the film splices kept breaking. The only explanation for this was the extremely low humidity prevailing at the time. Steaming the film was considered to cure the trouble, which may or may not have helped, but in the meantime it was realized that the only purpose of the film was to give visual timing information to the re-recorder operator so he could fade music and effects up or down. However, even with the film the re-recording operator has to be very familiar with the scenes and often has to estimate while looking at the picture where a scene is going to end unless the film has been cuemarked in advance so the indicator will flash on the screen to warn of the impending change.

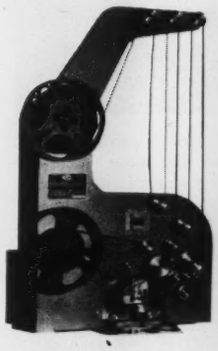
Taking all this into account, the system can actually be made more accurate for timing purposes and the projection of the picture can be eliminated for re-recording work on many films.

The procedure again depends on the equipment at hand. The equipment used for the system under discussion consists of 3 Magnacorders stacked one above the other plus a separate Ferrograph machine. The Ferrograph was set up as a variable speed machine for re-recording. The second playback track (the narration track) is put on one of the Magnacorders and the final

Continued on Page 254

EDGE NUMBER ANY MOTION PICTURE FILM WIDTH

- ENM-16 numbers 16MM film every 40 frames. An adjustment bar permits edge numbering the film in any area (16MM only).
- ENM-16-M numbers 16MM film every 16 frames to match 35MM. Numbering can be done in any position on the film.
- ENM-35 numbers 35MM film every 16 frames. A combination 17½-35MM machine is available at a slightly higher cost.
- ENM-70 numbers 70MM film every 16 frames. (Equipped with an 80 tooth sprocket with five perforations per frame.)



ENM-16
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ENM-16-M
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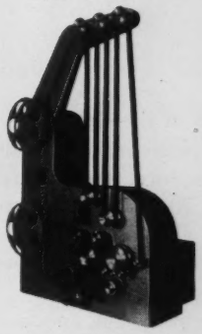
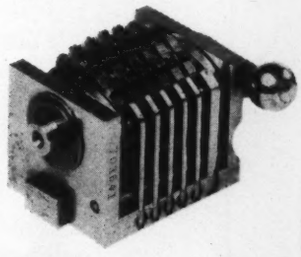


ENM-35
$2500.

ENM-70
$3250.

- Machine can edge number rolls up to 3000'.
- Friction devices control the payout reel. A torque motor allows the film to be taken up evenly and smoothly. An adjustment knob for the torque motor rheostat permits quick adjustment to take up 1000, 2000, and 3000 foot reels.
- The impression roller is free wheeling and self adjusts itself to give a most legible number without the danger of embossing.
- A simplified inking system with an eccentric center roller in the ink well provides quick alignment for the applicator sponge rubber roller. A doctor knife in the inkwell removes all surplus ink from the inking rollers.
- There is a simple adjustment for dispensing the amount of ink required. The unit has a small brush wheel to clean the numbering element after the number is applied.
- A micro switch cuts the power when a roll of film is completed.
- A Veeder Root counter checks the film footage.
- A keeper holds the film in place for sync mark and spot coding.
- The handle in front permits the operator to manually turn the numbering block to the desired position for a number change.
- Running speed is between 80 to 110 feet per minute.



NUMBERING BLOCK

- The numbering block generally consists of two letter wheels or one number and one letter wheel manually operated and four number wheels which move automatically and number from 0001 to 9999. All numbers can be reset by hand to begin at any desired number.
- ENB-35 ($400)... Numbering block for 35MM indirect reading. Two letter wheel and four numbers.
- ENB-16 ($400)... Numbering block for 16MM direct reading. One letter and four numbers wheel or two letters and four number wheel.

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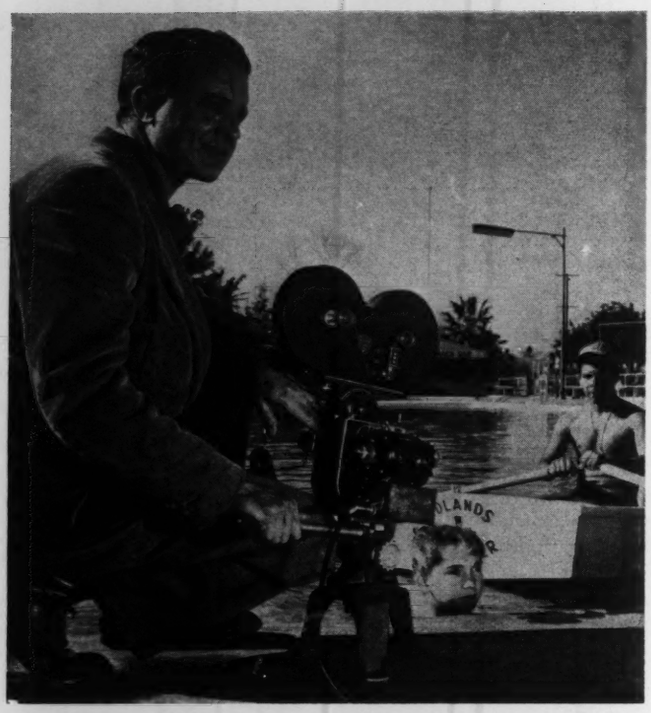

CAMERAMAN-DIRECTOR Stanley M. Loewy sets up for a poolside shot. Picture was filmed in Southern California during Christmas vacation, when school-age youngsters were available. Water was heated to overcome chill of winter weather.

How 'No Second Chance' Was Staged And Filmed

One-time lifeguard, now a doctor, produces film aimed at reducing public swimming-pool casualties through better training of lifeguards.

By STANLEY M. LOEWY

ABOUT A HUNDRED of the drownings which occur annually in the U.S. take place in public swimming pools having paid lifeguards on duty. To help reduce these tragic and needless deaths, a 20-minute color and sound film has just been produced. But it might never have been made if a young medical student had not spent part of his college summers as a lifeguard.

Dr. Ben B. Thompson, the one-time lifeguard who is now a prominent Riverside, California physician-surgeon, could not read newspaper accounts of such accidents without wondering how they could possibly happen if every guard were properly trained to prevent them.

His investigation of such deaths proved that most guards simply were *not* being instructed in lifeguarding techniques. Oh, they knew how to plunge into the pool and make a rescue, but all too often the victim drowned unseen because guards had not been taught certain vital points in *preventing* the *possibility* of drowning.

Thus, Dr. Thompson decided to become the producer of a film that would exhort lifeguards to employ essential practices which would reduce the yearly death toll in public swimming pools.

As writer-director-photographer, it became my duty to translate these rules into cinematic form, and try to present the case in such a way that lifeguards would recognize the gravity of the situation, accept our suggestions, and respond to this appeal.

Several challenges faced us: Every situation had to be believable, so that guards would recognize it as being true-to-life. While we wanted the film to be pictorially interesting and artistically successful, we also had to be certain that very sequence was easy to understand. Finally, we wanted to emphasize the terrible waste in a human drowning without becoming too macabre.

The film starts cold, without titles, as an ambulance hurtles down the street and over the camera. In a reverse angle shot, the two attendants remove a stretcher and hurry with it, directly past us.

Next we cut to a shot of a deserted pool. No one is swimming now, for a small girl has been pulled from the water and lies surrounded by a circle of stunned bystanders as artificial respiration is administered. The ambulance attendants apply a resuscitator. A doctor finally pronounces the child dead, and the blanket is drawn over her. "No Second Chance," the main title, appears over the water of the pool.

Because we wanted each viewer to be aware that a human life might be at stake, we felt it necessary to keep this hazard alive by showing several "drownings" at various points in the film. Only a good swimmer can simulate

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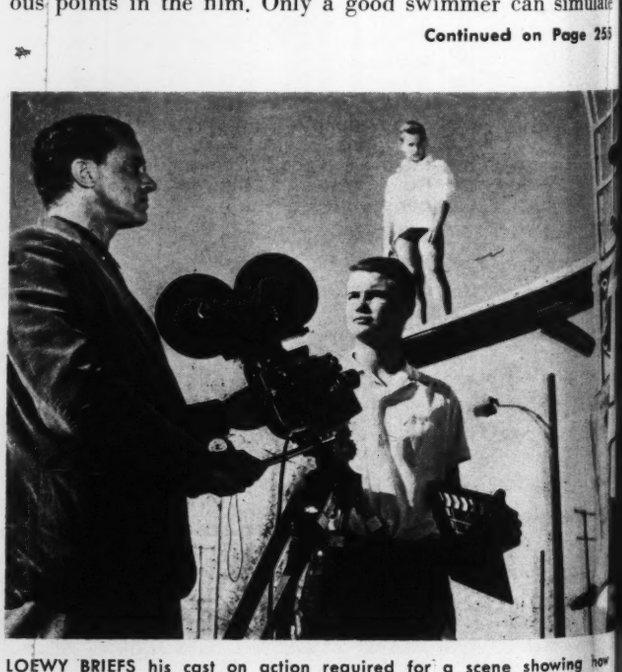

LOEWY BRIEFS his cast on action required for a scene showing how lifeguards can prevent serious accidents which may occur when the high-diving stand is not properly supervised.

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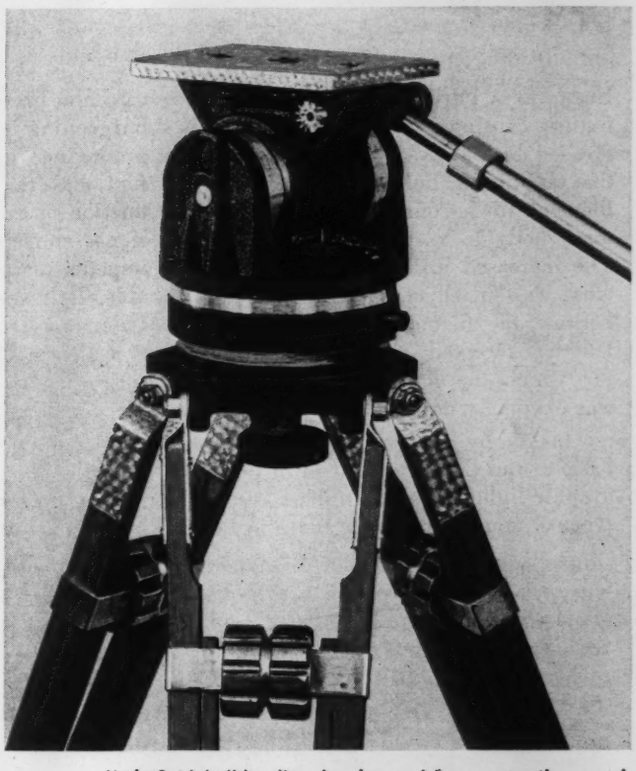

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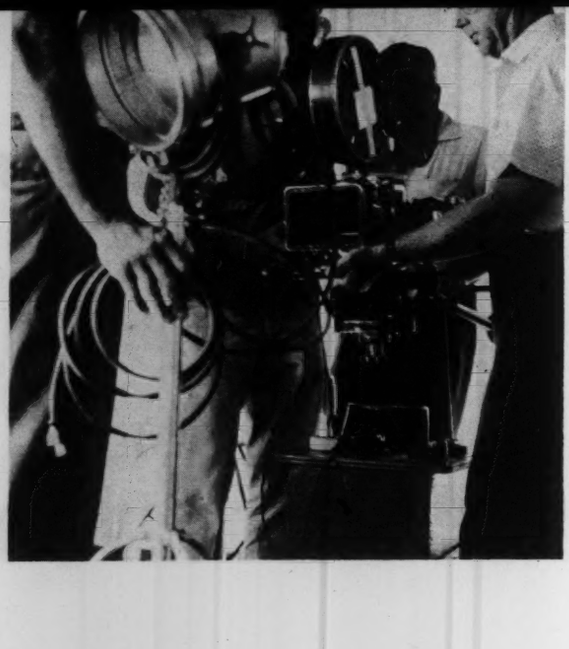

Colortran—Lightweight Set-Lighting Package

Photographic lighting of high efficiency is provided by lightweight equipment using small bulbs working on boosted voltage.

EVER TAP A burned out bulb in a light fixture, causing it to re-light and at increased brilliance? What happened is that tapping the bulb caused the broken filament to re-connect itself with the main body to re-establish the circuit. The increased brilliance resulted from what was, in effect, increased voltage, because the filament (now shorter in length) received more voltage—that for which the bulb's longer filament was originally designed.

This is by way of explaining the basis of the Colortran system of photographic lighting, which utilizes certain types of non-photographic bulbs in Colortran light units and which are made to produce illumination of photographic quality and brilliance through a step-up of the voltage feeding them. Unlike the broken filament bulb described above, here the voltage of the line feeding the lamps is deliberately increased causing the bulbs to burn brighter although, of course, with some consequent shortening of bulb life.

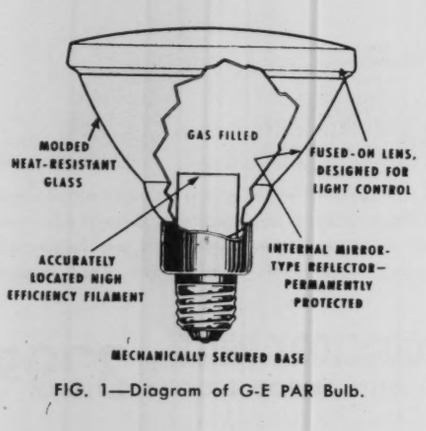

FIG. 1—Diagram of G-E PAR Bulb.

The broadening fields of motion picture film production—most notably the burgeoning industrial and in-plant film producing groups, independent TV film makers, plus the increasing production of entertainment films in part if not entirely on location—has given impetus to increasing use of the portable, lightweight, and highly efficient Colortran lighting equipment.

Now Colortrans have been "discovered" by European film makers. So successful has been their initial use there that Mole-Richardson, Ltd., London, England, has acquired the British agency for their distribution.

Most U. S. cinematographers know about this equipment — at least by name. Some have yet to use it. And a great many professionals still do not know the basic principle of the Colortran lighting system, which differentiates it from that of conventional studio lighting.

It has remained for an eminent Italian motion picture engineer, Piero Cavazzuti, to set down the facts in a paper, which has recently been released by Mole-Richardson, Ltd., and which originally appeared in an issue of *Bolletto Tecnico*, monthly journal of the Associazione Italiana Cineoperatori—the Italian equivalent of the A.S.C.

"The principle on which design of Colortran units is based," Cavazzuti explains, "consists in giving the scene lighting group (of lamps) an excess voltage for a short period while the scene is being filmed. Much greater light fluxes (illumination in terms of foot candles) than normal can thus be obtained from each individual incandescent bulb, which can therefore be of lower power and fitted to a very lightweight lamp housing. Thus the same amount of light is obtained as would ordinarily be gained from much heavier equipment using standard cinematographic bulbs.

"The Colortran units are mainly intended for use where very easily transportable equipment is required, in order to reach difficult locations or to film inside buildings and monuments where size and the avoidance of damage to furniture and wall decoration are limiting factors, and where a need therefore exists for lightweight, compact equipment connected to the power supply by means of flexible cables of small cross-section area. They are also suitable for use, both from the power consumption and bulb-hour cost points of view, in small studios. And, as we shall see, the report of the National Broadcasting Company also finds them of interest for use in television studios.

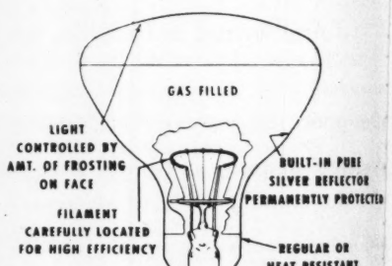
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FIG. 2—Diagram of G-E internal reflector bulb.

"Before embarking upon a detailed description of the various Colortran units it is worth our while to deal briefly with the principal features of

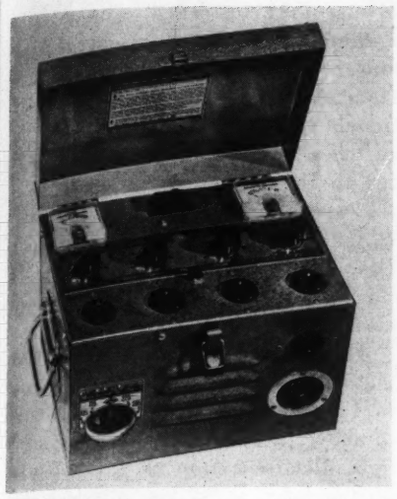

FIG. 3—Colortran Cinemaster Chief booster transformer which enables lamps to burn at different color temperatures.

the bulbs made by General Electric, Westinghouse and other firms and which are used with the Colortran equipment.

"The first of these is the "PAR" or internal parabolic reflector bulb shown in Fig. 1. As can be seen, the front portion of the bulb has a fused-on diffusing lens. The following bulbs are available in each voltage: spot (marked NSP, or narrow spot), wide flood (WFL) and medium flood (MFL). The illustration also shows the rectangular filament which (as explained in the General Electric catalogue) is precision-located in such a manner that its position is not out of alignment with the optical axis of the bulb by more than one and a half degrees. The "PAR" series embraces 75, 150, 200, 300 and 500 watt bulbs marked as follows: 150 PAR 38, 300 PAR 56, 500 PAR 64, with the designation NSP, WFL, etc. added as explained above. The numbers 38, 56, 64, etc. refer to the size of the bulb.

"The mirrors in the "PAR" bulbs are elliptical in shape and thus throw a fairly long oval beam instead of a circular one.

"As a result of the different diffusing lenses the 500 PAR 64 NSP, 500 PAR 64 MFL and 500 PAR 64 WFL bulbs, for example, have beam angles of 13° x 20°, 20° x 35° and 35° x 65° respectively. The smaller wattage bulbs have similar beam characteristics.

"Another type of General Electric bulb used in the Colotran equipment is the "R" internal reflector type shown in Fig. 2. This type has a circular arc-shaped filament, and as in the "PAR" bulb the inner wall, apart from the terminal portion, is silvered so as to provide a parabolic mirror. Instead of having a fused-on diffusing lens the front part is frosted, the diffusing power of the bulb depending on the degree of frosting, which thus determines its use as a spotlight or floodlight. As in the case of the "PAR" bulbs the markings given in the General Electric catalogue clearly indicate the use for which each bulb is designed. Thus the 300 R/SP bulbs (also known as R-40, the size of the bulb being 40) are 300 watt reflector bulbs for spotlight purposes, whereas the 300 R/FL are 300 watt reflector floodlamp bulbs. The mirrors are circular instead of elliptical, and the beam angle is about 35° for the spot versions and 115° for the flood versions. These are of course circular beams. The 'R' series covers a wide range from 75 watts (R-30) to 1000 watts (R-60 or R-52).

FIG. 4—The Colortran Cine King 500-watt lamp.

"The 'PAR' and 'R' bulbs are an important feature in that they have a long average life of about 2000 hours, provided that they operate at the voltage for which they are designed, namely 120 volts.

"Increasing the voltage supply of either type lamp causes the light flux to increase rapidly, and if the voltage is increased by 35% the resulting gain in light flux will be about 270%. This increase is, however, accompanied by a shortening of the working life of the bulb to about 1/50th. This means that a 'PAR' or 'R' bulb fed with a 35% excess voltage up to a temperature of

FIG. 5—Super Kicker 500- or 1000-watt lamp.

3200° K and producing a light flux gain of 270° will, instead of lasting for 2000 hours, only last for 40 hours. This result, however, is purely theoretical, and the Colortran engineers have demonstrated, as a result of several years' experiments, that the life of a bulb can be prolonged, even when subjected to excess voltages, if it is suitably preheated at a reduced voltage for a few minutes before the full boost-voltage is applied. What actually causes most damage to the filament of an incandescent bulb is the strong current produced at the moment when the lamp is switched on and when the filament is still cold and has a low ohmic strength. This current is already seven or eight times greater than the working current if a lamp is suddenly connected up at full voltage, and can become even greater if the bulb is suddenly subjected to a higher voltage as happens when boosting is applied. However, if the lamp is switched on at a reduced voltage and the filament is allowed to warm up (the voltage not being increased until the filament has acquired a substantial ohmic strength) the working life of the bulb can be considerably lengthened."

Cavazzuti, in his paper, then goes on to describe the Colortran transform-

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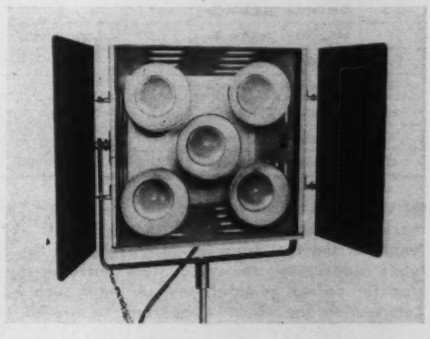
FIG. 6—Groverlite Senior floodlamp utilizes five high-efficiency 150-watt bulbs.



The Importance Of . . .

Tables, Charts and Calculators

They supply a ready answer to most problems encountered in cinematography.

TABLES, CHARTS AND CALCULATORS will always play an important part in the work of any cinematographer. Because there is more to cinematography than simply focusing and shooting, a great deal in the way of alternative or compensating procedure must be absorbed and remembered by the cameraman. Where memories are unreliable or the time for research and study limited, a source of data available for instant reference is essential for photographic success. More than one top-flight cinematographer in the Hollywood studios carries in his billfold small cards on which he has noted information vital to his work.

But let us consider the cinematographer in other fields of production, such as the in-plant motion picture department, the small industrial film studio and others where the cameraman often doubles as film editor, script writer and sometimes director. With so many diversified yet related chores, it takes a pretty keen mind to retain all the information that is required for such scope of operations in the production of motion pictures.

The reader may test his own knowledge to bear this out. Do you know, without looking it up, what lens stop to use to compensate for the reduction of light reaching the film when you shoot at 64 frames per second, instead of 24?

What is the depth of field of a 50mm lens focused at 30 feet and set at f/3.5?

Do you know the field of view of this same lens when focused on a subject 20 feet distant?

Do you know where to set your lens when required to open up *one full* stop, say from f/4.5? From f/1.5?

Actually few cinematographers, assistants or operators would trust their memories for such answers. Yet these are problems faced by cameramen every day. Some professionals, of course, whose daily business is cinematography, encounter problems and subsequently solutions which ultimately become part of their store of knowledge.

The cameraman whose work is more diverse may be called upon to make a slow-motion shot only once a year, and he cannot be expected to know from experience just how much additional exposure to allow when he switches the camera speed from 24 fps to the higher speed of 48 fps—the speed used to make the slow-motion shot. But if he has access to a Diaphragm Compensator Chart, he can find the answer to his problem in a minute.

The value of such a reference source may be seen by examining the chart in Fig. 2. Take the example referred to above. Assuming that the prevailing light dictates a stop of, say, f/5.6 for photography at 24 fps., the lens must be opened to f/4.0 to shoot at 48 fps in the same light. (The shutter opening, of course, would remain unchanged for cameras having variable shutters.)

The work of some cinematographers is often quite specialized so that they are shooting daily just about the same type of shots, using the same type of light, etc., and rarely encounter a problem that cannot be solved through knowledge acquired in the course of one's daily work. Here it is possible to memorize a limited amount of factual information. And if you can rely on your memory to supply a

Continued on Page 246

FIG. 1

CLOSE-UP DIAPHRAGM CALCULATOR
3 INCH LENS
DISTANCE OF LENS TO OBJECT

LIGHT VALUE		20 in.	10 in.	7 in.	6 in.	5 in.	4½ in.	4 in.	3¾ in.	3½ in.	3¼ in.
		EFFECTIVE APERTURE									
F. 2	Becomes →	F. 2.3	F. 2.8	F. 3.2	F. 4	F. 4.5	F. 5.6	F. 8	F. 11	F. 12	F. 16
2.8	Becomes →	3.2	4	4.5	5.6	6.3	8	11	16	18	22
4	Becomes →	4.5	5.6	6.3	8	9.1	11	16	22	25	32
5.6	Becomes →	6.3	8	9.1	11	12	16	22	32	36	45
8	Becomes →	91	11	12	16	18	22	32	45		
11	Becomes →	12	16	18	22	25	32	45			
16	Becomes →	18	22	25	32	36	45				
22	Becomes →	25	32	36	45						

IN ULTRA-CLOSEUP photography, the basic f/ value is affected by use of extension tubes. Normally there is no apparent change in the lens f/ value when the camera is at least ten times the focal length of the lens from the subject. But as the camera-to-subject distance decreases, use of extension tubes reduces the amount of light reaching the film at a given stop as compared to that for same stop for normal photography. A chart such as one above then becomes valuable as a means of determining the effective aperture to use in shooting a small object at very close range.

FIG. 2

DIAPHRAGM COMPENSATOR
Lens Stop Conversion
For Various Camera Speeds
16 mm CAMERAS

8 Pictures per Second	12 Pictures per Second	16 Pictures per Second	24 Pictures per Second	32 Pictures per Second	48 Pictures per Second	64 Pictures per Second
LENS STOPS COMPENSATED FOR SPEEDS ABOVE						
F. Value	F. Value	F. Value	F. Value	F. Value	F. Value	F. Value
2.8	2.3	2.	1.8	1.4		
3.2	2.8	2.3	2.	1.8	1.4	
4.	3.2	2.8	2.3	2.	1.8	1.4
4.5	4.	3.2	2.8	2.3	2.	1.8
5.6	4.5	4.	3.2	2.8	2.3	2.
6.3	5.6	4.5	4.	3.2	2.8	2.3
8.	6.3	5.6	4.5	4.	3.2	2.8
9.1	8.	6.3	5.6	4.5	4.	3.2
11.3	9.1	8.	6.3	5.6	4.5	4.
12.5	11.3	9.1	8.	6.3	5.6	4.5
16.	12.5	11.3	9.1	8.	6.3	5.6
18.	16.	12.5	11.3	9.1	8.	6.3
22.	18.	16.	12.5	11.3	9.1	8.
25.	22.	18.	16.	12.5	11.3	9.1
32.	25.	22.	18.	16.	12.5	11.3
36.	32.	25.	22.	18.	16.	12.5
45.	36.	32.	25.	22.	18.	16.
64.	45.	36.	32.	25.	22.	18.

WHEN THE assignment is to shoot at a camera speed other than normal, the chart above will show what stop to use. Say the established stop for 24 fps is f/5.6 and you wish to shoot at 64 fps instead. As the chart shows, the correct stop to use is f/3.2.

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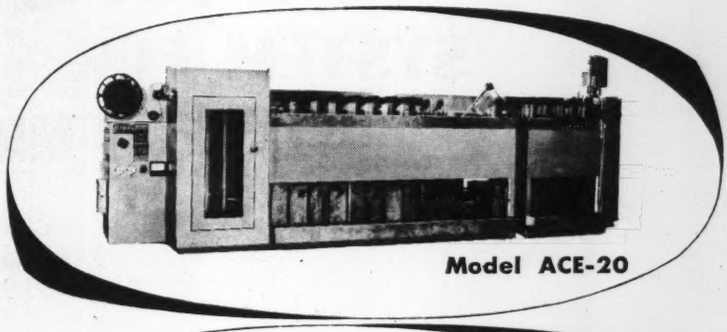

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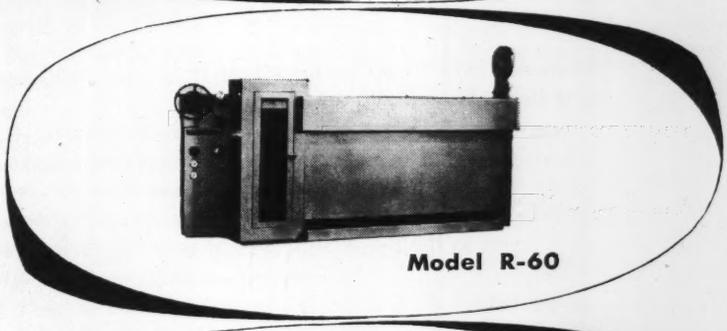

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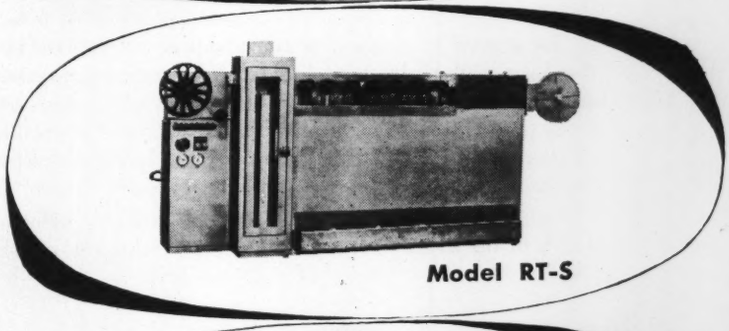

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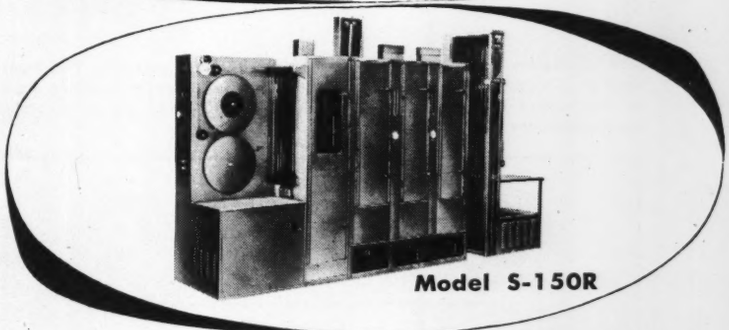

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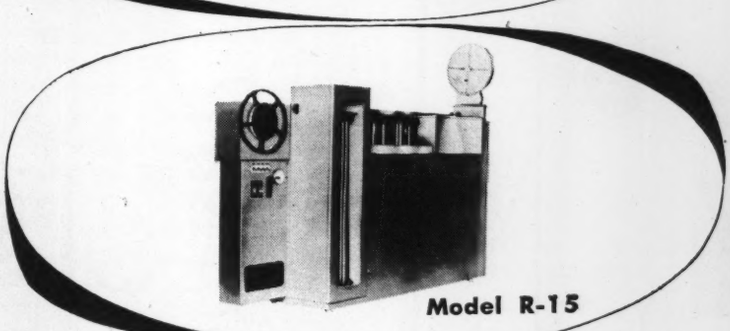

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316 D	Neg/Pos.	B&W	16mm	60 FPM
316 DS	Neg/Pos.	B&W	16mm	60 FPM
416 D	Neg/Pos.	B&W	16mm	80 FPM
N	Neg/Pos.	Microfilm	16/35mm	8 FPM
L	Neg/Pos.	B&W	16/35mm	8 FPM
RN 16/35	Neg/Pos.	B&W	16/35mm	24 FPM
RN 16/35mm	Neg/Pos.	Microfilm	16/35mm	24 FPM
316D35	Neg/Pos.	B&W	16/35mm	32 FPM
316D35M	Neg/Pos.	Microfilm	16/35mm	32 FPM
416D35	Neg/Pos.	B&W	16/35mm	80 FPM
PN100	Neg/Pos.	B&W	16/35mm	100 FPM
S 150-R	Neg/Pos.	B&W	16/35mm	150 FPM
470 ND	Neg/Pos.	B&W	70mm	10 FPM
35ND70	Neg/Pos.	B&W	35/70mm	30 FPM
70R10	Reversal	B&W	70mm	10 FPM
R 15	Rev & Neg/Pos.	B&W	16mm	15 FPM
R15TC	Rev & Neg/Pos.	B&W	16mm	15 FPM
R40	Rev & Neg/Pos.	B&W	16mm	25 FPM
R40TC	Rev & Neg/Pos.	B&W	16mm	25 FPM
RT-S	Rev & Neg/Pos.	B&W	16mm	85-125 FPM
R-60	Rev & Neg/Pos.	B&W	16mm	30 FPM
R-17-35	Rev & Neg/Pos.	B&W	16/35mm	17 FPM
R-60S	Rev & Neg/Pos.	B&W	16mm	60 FPM
R-90	Rev & Neg/Pos.	B&W	16mm	90 FPM
CN-10	Eastman Neg Ektacolor	Color	46mm	12 FPM
CN35-10	Eastman Neg Ektacolor	Color	35/46mm	12 FPM
ENP-25	Eastman Neg	Color	16/35mm	25 FPM
ACE 20	Ansco/Ektachrome 7255 Ektachrome Eastman SO 260 SO 270	Color	16mm	22 FPM
ACE 40	Ansco	Color	16mm	36 FPM
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35KC-45	Kodachrome	Color	16mm	45 FPM
			35mm	8 FPM

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A SOUND SYSTEM FOR SIXTEEN-MM

By JOE P. GRAY

Photos by Ralph Y. Grubb

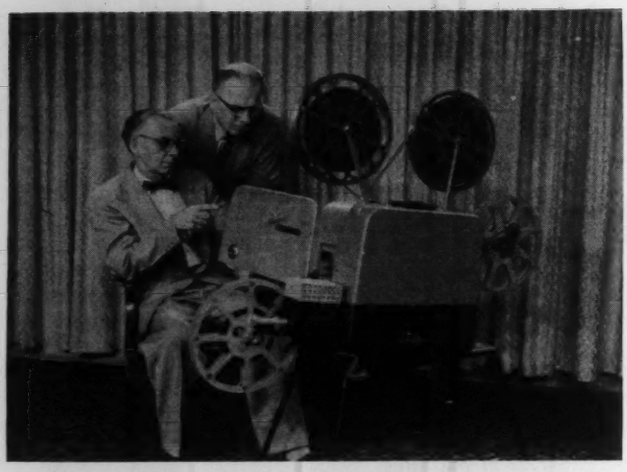


FIG. 1—Bell & Howell 202 magnetic-optical sound projector modified for projecting picture with separate sound film. Author Joe P. Gray (seated) explains system to interested onlooker.

I SHALL NEVER forget boring a hole in the case of my brand new Bell & Howell 202 sound projector!

But it was for a good cause—an important step in a plan I had conceived to utilize my magnetic-optical sound projector in a unique way. The plan involves the use of sprocketed 16mm magnetic *film* as the recording medium as opposed to the use of film pre- or post-striped for sound.

Magnetic film is extensively used today by film makers in all fields of motion picture production because of its excellent recording characteristics and particularly because of the several conveniences it embodies. Second- and even third-generation dupes of magnetic film recordings possess such excellent quality they are often difficult to distinguish from the original. This quality has encouraged the practice of post-mixing sound from several tracks to form a composite track for the picture.

Sound quality of high professional order is within the reach of the average free-lance 16mm film maker, provided

FIG. 2—Gray holds auxiliary takeup unit which is attached to front of projector. Case encloses motor that drives the takeup belt working from a friction-clutch pulley.

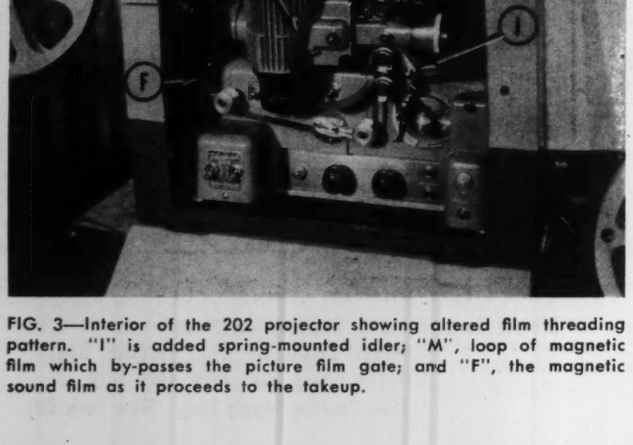
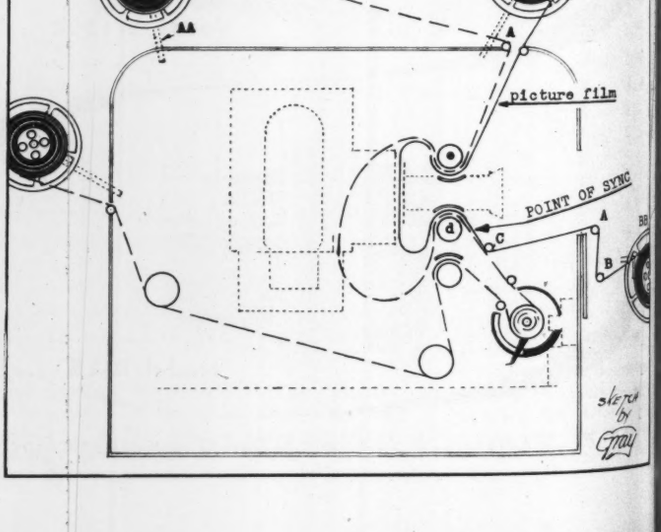


FIG. 3—Interior of the 202 projector showing altered film threading pattern. "I" is added spring-mounted idler; "M", loop of magnetic film which by-passes the picture film gate; and "F", the magnetic sound film as it proceeds to the takeup.

FIG. 4—Author's complete projector modification is shown in this diagram. Path of the 16mm sound film is indicated by the heavy broken line, and that of the picture film by the solid line. Permanent additions to the projector mechanism are the idlers "A", "B" and "C".



he has access to a 16mm magnetic-optical film projector, such as the B&H 202.

The great problem in shooting picture and sound simultaneously, using 16mm pre- or post-striped film is the problem inherent with all single system sound—that of editing. The writer was never satisfied with the limitation that a striped sound track on the picture film imposed. Where the track is a permanent part of the picture film, it isn't possible to shift the track forward or backward in the editing process. Nor is it possible to delete or add to a permanently applied recording medium without loss to either the picture or the track, or both.

Since double-system recording is the general practice in professional film production, I decided to approximate the professional's procedure as closely as possible and record sound for my films on 16mm magnetic film and run the two films—picture and sound—through the projector at the same time after threading them around the sprockets with the two mediums in sync.

The job of altering the 202 projector to accommodate both picture and sound films simultaneously was relatively simple, and the modification in no way affects the portability of the projector. Salient features of this modification are to be seen in the accompanying photos, and are explained further in the diagram.

As this new system called for two separate 16mm films (picture and sound) to travel through the projector simultaneously and interlocked for sync, the initial step was to provide a means for the projector to accommodate the second (sound) film.

The fully modified projector is shown in Fig. 1. Front of the projector is at the left, and it will be seen that two additional reel supports have been added—one for the sound film supply reel, which is on top of the projector case, toward the rear ("AA" in Fig. 4), and the motorized takeup reel in front of the projector ("BB" in Fig. 4). As may be seen from the diagram, the normal takeup pattern of the picture film has been altered so that the film emerges at front of the projector case and proceeds to the auxiliary takeup reel; the takeup reel at rear of the projector, which is normally used for the picture film, now becomes the takeup for the magnetic sound film. The auxiliary takeup — consisting of the reel spindle and motor drive—is a compact

Continued on Next Page

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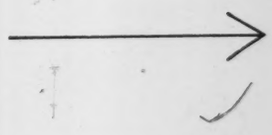

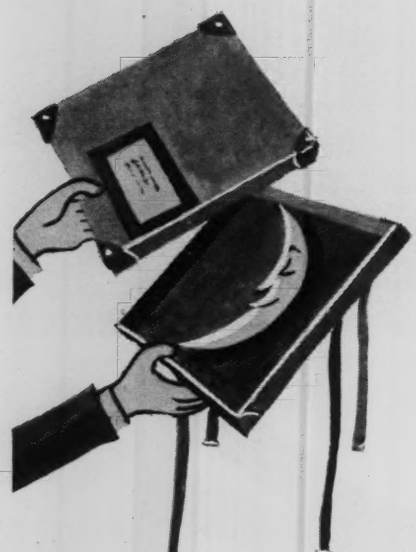

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all-in-one unit, which may readily be mounted on or detached from the projector, as may be seen in Fig. 2. This unit consists of a lightweight metal housing containing a conventional electric phonograph turntable motor plus a friction-clutch pulley and spring belt to the takeup spindle which is mounted on a metal arm extending from the housing. The auxiliary arm "AA" is a standard 202 feed-arm and is conventionally-mounted for ease in removing and storage.

Fig. 3 shows interior of the modified 202 projector, the modifications of which are further detailed in the diagram, Fig. 4. Indicators point out the spring-mounted idler "I" (identified in the diagram at "C"), which maintains the desired film security as it passes over the lower drive-sprocket; "M" the path of the magnetic film which by-passes the picture film gate; and "F", the magnetic sound film as it proceeds toward its respective takeup reel.

In Fig. 4, path of the magnetic sound film is shown by the heavy broken line. Here the film travels from the supply reel mounted on the support "AA" over the idler roller "A" and thence to the top sprocket "e" where it is interlocked with the picture film (solid line). As previously stated, the sound film by-passes the picture film gate but is re-united with the latter at sprocket "d", then proceeds to the sound head and on to the takeup reel.

To facilitate travel of the picture film from sprocket "d" to the auxiliary takeup reel "BB" mounted at front of the projector, three idlers—"A", "B", and "C" were mounted at strategic points along the film path. Idler "A" at this point is necessary to afford safe slot clearance by the film as it leaves the projector. Idler "B" is affixed to a spring-tension arm to compensate for the "starting jerk" on the picture film, which occurs when the projector is started. Idler "C" maintains the desired sprocket-tooth security as the film travels over the drive-sprocket "d"—as previously mentioned.

The ideal sync point for the two films is indicated at a point about one-half the distance between sprocket "d" and idler "C". Accurate sync threading is accomplished by matching up punched holes in both the magnetic film and picture film at this point, and the threading procedure then begins with locking both films over sprocket "d".

The basic purpose of the modification described above, of course, is, first, to permit use of 16mm magnetic film for sound recording instead of pre- or post-striped 16mm film; and second, to utilize the 202 projector for editing of both sound and picture—now feasible because each medium is on a separate film. When a cut is required in the picture film, the sound film can be cut or otherwise adjusted to maintain a continuation of sync between the two very much the same as it is done by film editors at the cutting table, using a sound reader, synchronizer and associated equipment. Using the modified 202 projector, the two films are merely re-aligned on the drive sprockets. Last, but not least, it permits simultaneous projection of both picture film and sound film in sync when it is desired to screen a film without the need to combine both picture and sound in a single print.

This setup has been successfully used by the writer since shortly after introduction of the B&H 202 projector. It not only meets my average needs but the projector modification is pleasing in appearance. As for the 16mm magnetic film, it costs about the same as sound-stripe applied after the photography, and offers the advantage of full-head recording at all times. It can be cut and spliced on a conventional film splicer, the same as picture film, and it is the ideal medium where sound subsequently is to be re-recorded to optical for release prints. ▪

TABLES, CHARTS, ETC.

Continued From Page 242

quick answer, so much the better. If you want to perfect this technique, start out by memorizing one phase of cinematography at a time.

Take fast and slow speed camera work, something that comes along with increasing frequency these days. One method is to expose a roll of film in your camera, using the full range of fps speeds afforded by the camera and then studying the results on the screen.

Eight frames per second speed, for example, is one-half the speed of 16 fps. At 8 fps, twice the amount of light will reach the film as when the camera is running at 16 fps. In order to obtain an exposure result equal to that obtained with the camera operating at 16 fps, the lens must be stopped down one full stop for photography at

8 fps. The chart in Fig. 2 shows the correct stop to use at other camera speeds ranging from 12 to 64 fps.

Now you may not know what constitutes a *full stop* on your particular lens because not all lenses are calibrated in full stops. Here, again, you will need a dependable source of reference. It is possible for the cinematographer to memorize the established "full stop" figures for camera lenses so thereafter he can properly set the lens diaphragm when a situation demands "opening up" or "closing down" one stop, etc.

Good motion picture photography depends upon accurate exposure and sharp focus—in short, about 90% of your photographic success depends upon your camera lens. This is not to infer that every cinematographer should memorize all the important facts pertaining to lenses, etc., but he should know where to find answers to problems as they come up. Better still, the information should be close at hand, and the best source of such information is a slide-rule type calculator, prepared tables and charts or a reliable handbook.

The American Society of Cinematographers is presently preparing for early publication a completely new handbook for the professional cinematographer. It will exceed in accuracy, fund of facts, and method of reference any other handbook published to date relating to motion picture photography. This because all charts are being compiled in the light of current cinematographic practices and are being checked and re-checked by experts in their respective field. Technical men of the Motion Picture Research Council in Hollywood have assisted extensively in this accuracy determination, as have the manufacturers of professional cameras, lenses, lighting and other equipment.

In addition to its factual content, the handbook will contain an extensive advertising section in which the products, and services of the nation's suppliers to the motion picture industry will be graphically represented.

Tentative date for publication of the new A.S.C. handbook, tentative title for which is *A.S.C. Photographic Manual*, is around mid-summer. It's a book long overdue and its certain to ease the daily tasks of thousands of cinematographers in every conceivable field of motion picture production. ■

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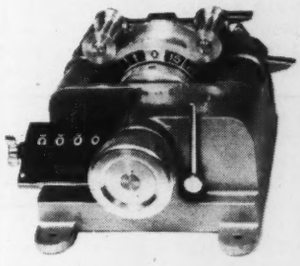

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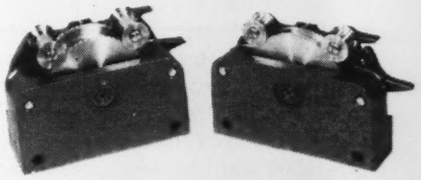

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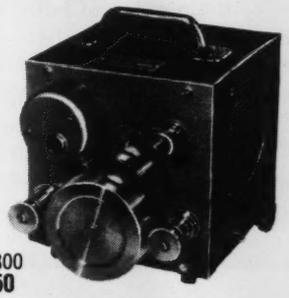

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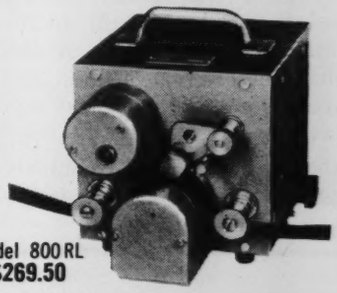

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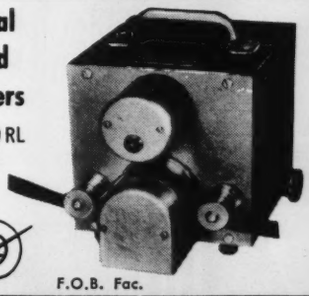

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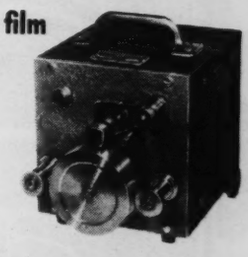

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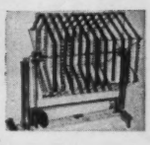

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COLORTRANS

Continued From Page 241

ers which feed electric current to the lamps at increased voltages and at selective color temperatures, as follows:

"(1) They can be connected to power systems having a rated voltage of 120 volts (actual voltage 110-130 volts) or 230 volts (actual voltage 220-240 volts). The Colortran transformer has a number of primary tappings, and a rotary contactor coupled with a voltmeter enables the input voltage to be adjusted as desired, namely to 120 or 230 volts;

"(2) The output circuits are of the multiple type and can be controlled as a whole or separately by means of contactors which take the output voltage from the various secondary tappings of the transformer, thus enabling the lamps to be brought up from the initial preheating voltage to the excess voltage necessary to obtain color temperature of 3200°K or 3450°K;

"(3 A voltmeter with a clear, accurate scale shows the output voltage and thus the working color temperature of the bulb.

TABLE 1

Cine King Light • Distance 15 Feet

Type of Bulb	Illumination Strength	Illumination Area
500 PAR 64/NSP		
at 2950° K (120 V)	400 f.c. (4280 Lux)	1'11½"x1'11½"
at 3200° K	1100 f.c. (11750 Lux)	1'11½"x1'11½"
at 3450° K	1850 f.c. (19200 Lux)	1'11½"x1'11½"
500 PAR 64/MFL		
at 2950° K (120 V)	130 f.c. (1390 Lux)	4'0"x7'1"
at 3200° K	350 f.c. (3740 Lux)	4'0"x7'1"
at 3450° K	620 f.c. (6650 Lux)	4'0"x7'1"
500 PAR 64/WFL		
at 2950° K (120 V)	50 f.c. (535 Lux)	4'0"x12'0"
at 3200° K	115 f.c. (1230 Lux)	4'0"x12'0"
at 3450° K	210 f.c. (2240 Lux)	4'0"x12'0"

"The Cinemaster Chief transformer, for example (see Fig. 3), can supply five 500-watt bulbs at a temperature of 3200°K on a 120-volt system, and eleven 500-watt bulbs on a 230-volt system; at a temperature of 3450°K the number of bulbs which can be supplied drops to four and seven respectively.

"The ease of adjustment from the preheating temperature to the working temperature of 3200°K and 3450°K enables the bulbs to be kept preheated while shots are being prepared and during intervals, thus increasing their working life considerably. Among the new lamps produced by the Natural Lighting Corporation the most powerful are the Cine King Light (Fig. 4), which uses a PAR 64 500-watt bulb or a PAR 56 300-watt bulb, and the Super Kicker Light (Fig. 5), which can take 'R' type internal reflector bulbs of 500 or 1000 watts.

"The Cine King Light is an extremely lightweight lamp weighing only 5½ lbs., mounted on a telescopic stand (fully extended length 7'10½") weighing 7 lbs. The lamp can be used as a spot by fitting a PAR 64/NSP bulb,

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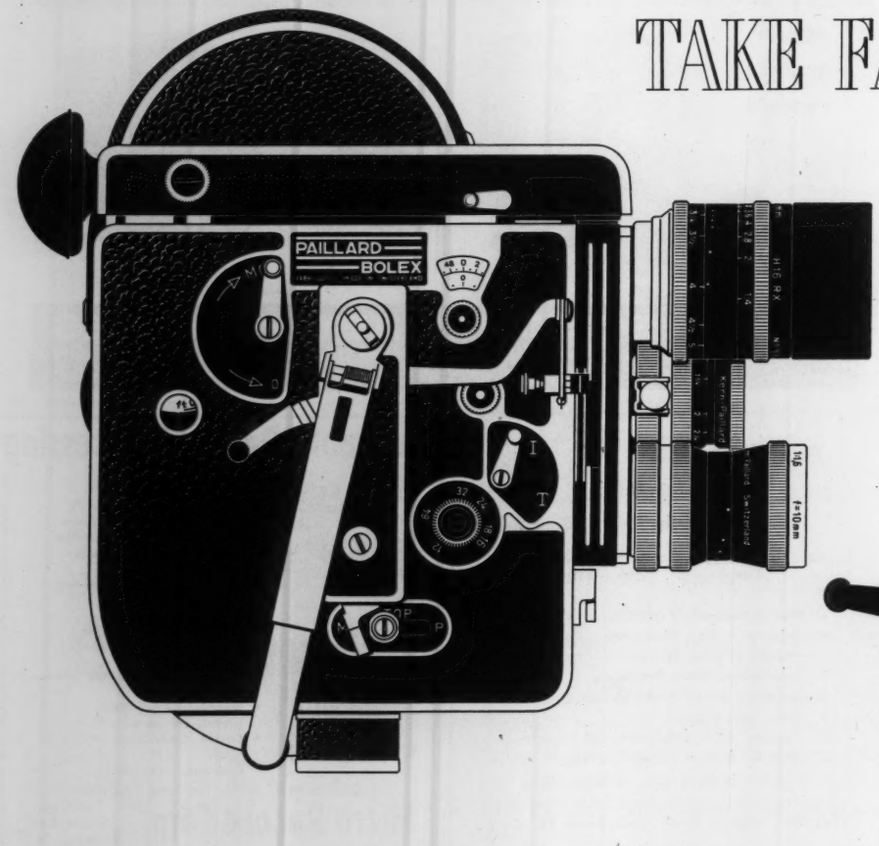

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TABLE 2

Super Kicker Light • Distance 15 Feet

Type of Bulb	Illumination Strength	Illumination Area
500 R/3 SP (R-40)		
at 2950° K	98 f.c. (1050 Lux)	Circle dia. 7'11"
at 3200° K	265 f.c. (2840 Lux)	Circle dia. 7'11"
at 3450° F	410 f.c. (4400 Lux)	Circle dia. 7'11"
500 R/3 FL (R-40)		
at 2950° K	23 f.c. (245 Lux)	Circle dia. 23'
at 3200° K	63 f.c. (670 Lux)	Circle dia. 23'
at 3450° K	96 f.c. (1030 Lux)	Circle dia. 23'
1000 R 52 (FL)		
at 2950° K	59 f.c. (630 Lux)	Circle dia. 23'
at 3200° K	160 f.c. (1700 Lux)	Circle dia. 23'
at 3450° K	250 f.c. (2680 Lux)	Circle dia. 23'

or as a medium flood with a PAR 64/MFL, or as a wide flood with a PAR 64/WFL bulb. In view of the lightness desired for the equipment it was preferable to adopt this method of varying the type of beam, rather than introducing the complication of a lamp trolley. The lamp can be fitted with adjustable metal niggers, screens or 'jellies'.

"Table 1 shows the illumination volume obtained with one of these lamps at a distance of 15 feet, using the various types of PAR 64 bulbs, at both the rated voltage and at the voltages necessary to produce temperatures of 3200°K and 3450°K. The sizes of the light areas are also given. It should be pointed out that the limits of the illuminated area have been taken at the point where the degree of illumination drops to about 60% of that at the center of the area.

"The Super Kicker Light, which is intended for use as a fill light, can operate with 500, 750 or 1000 watt 'R' type bulbs. As stated above, the 'R' type includes both spot and flood bulbs. Table 2 gives some approximate illumination figures obtainable with this lamp, which weighs only 3¾ lbs. It, too, can be fitted with adjustable niggers, 'jellies', etc.

"*Note:* Here, too, of course, the illumination decreases from the center of the circle towards the circumference. With the spot bulbs the limit is taken to be where the degree of illumination drops to about 60% of that at the center; in the case of the flood bulbs we have restricted the diameter of the circle to 23 feet in order to ignore the area where the illumination drops to below 60%. In addition to the two types described above Colortran makes a floodlamp unit containing three or five PAR 38 150 watt bulbs with side screens called Groverlite (See Fig 6), and panels with six 150-watt bulbs, as well as many other smaller units plus accessories for hanging and securing all these items of equipment."

Cavazzuti concluded his paper with the following short summary of the NBC Engineers' Report on Colortran equipment, which mainly covers tests carried out with the Masterlite, a lamp which is the prototype from which the Cine King Light has been developed, and on which it is thus a further improvement. The report is divided into

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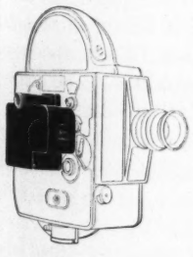

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chapters, the titles of which are given in the summary which follows:

"Ease of Handling: The Colortran units are without doubt easier to handle than standard ones since they are smaller and lighter. The Masterlite (Cine King) weighs only 5½ lbs., as against the 90 or so pounds of a 5000-watt light fitted with a Fresnel condenser. There is no need to move flood control equipment about; all that is necessary is to make the initial choice as to the type of bulb required.

"Life of Bulbs: It is difficult to assess the working life of the bulbs, since it depends on the supply voltages. It can safely be said, however, that the bulbs will last at least half as long as the 5000-watt type used in studio lighting equipment (i.e., 75 hours at 3200°K and 37 hours at 3350°). It is probable that the life of the bulbs will equal that of the type at present in use if the instructions issued by Colortran as to preheating are followed and the bulbs kept on a low voltage when not actually being used for photography.

"Assembly of Lamps on Scene: In view of the light weight of the lamps it is reasonable to expect a substantial reduction in the time taken to assemble and dismantle the equipment on the scene.

"Power Consumption: A Masterlite (Cine King) operating at full load (186 volts) uses about 900 watts, although it gives the same light flux as a standard 5000-watt lamp. This means that the use of these lamps not only saves current but also entails substantial economy in that the size of cables, switches and dimmers can be reduced. With these units our Nos. 1 and 5 studios could be used for color television without altering the existing layout — apart from the installation of transformers and the necessary connection panels.

"Uniformity of Beam: Unevenness in intensity distribution within the beam is somewhat greater with the Colortran lamps than with the Fresnel condenser type. This unevenness never exceeds 5-10% of the average figure, however, and cannot therefore lead to difficulties.

"Relative Intensity: The Colortran lamp, when fitted with a PAR 64 MFL (medium flood) bulb, is more intense than an ordinary 5000-watt lamp, whether operating at 3200°K or 3450°K. The unit would seem to be esepecially suitable in cases where the lighting equipment cannot be brought close to the actors.

"The Colortran lamp, when fitted with a PAR 645/WFL (wide flood) bulb, even when operating at 3450°K, does not entirely equal the intensity of a 5000-watt lamp with a Fresnel lens. The unit has, however, a wider beam than the 5000-watt lamp: at 15 ft. the PAR 64/WFL bulb throws a light 7'1" long as against 5'11" with the 5000 lamp. The Colortran lamp can thus be brought close to the subject to give a light equal in intensity to that of the 5000-watt lamp over the same or a greater area.

"The Colortran lamp, when fitted with a PAR 64/NSP bulb, gives a very intense spot which is six times greater than the illumination of a 5000-watt Fresnel lens spot. The width of the beam is nevertheless limited, which makes the unit particularly suitable for special intense lighting effects on scenery.

"Diffusion: The N.B.C. report then examines the requirements for a good source of diffused light, and concludes that the ideal is one which gives a greater area of lighting surface, so that instead of producing clearly defined shadows it creates softened outlines, i.e., areas of half light which enables the transition from light to shadow to take place as gently and unnoticeably as possible. The report goes on to describe a very simple method whereby it is possible (with the aid of a luminous source fitted with a diffuser, a lens screen or "gobo" and a light background, together with an exposure meter in which the surface of the cell is almost totally screened, leaving only a thin strip exposed) to examine the areas of half-light produced by the various sources by means of the rays which just touch the edge of the screen. This examination enables the effective dimensions of the source to be ascertained. The Colortran lamps, fitted with diffusers, were tested against ordinary 500-watt lamps by this method, and it was found that for diffusion purposes the dimensions of the lamp, when fitted with PAR 64/WFL bulbs, were almost equal to those of a 5000, namely 6½" x 4 15/16" as against the 7½" x 7½" of the 5000. It is thus preferable, the report concludes, for them to be fitted with PAR 64/WFL rather than PAR 64/MFL or PAR 64/NSP bulbs." ■

Mounting an extra long telephoto lens on small 16mm cameras is generally a lengthy operation. For this reason, many professionals carry a second camera mounted with a telephoto.

16MM AND 35MM PRINTING

Continued From Page 235

A logical first thought might well be "If best professional results are achieved by exposing a negative in the 35mm camera, then similar top results should come from exposing a negative in the 16mm camera."

Logical . . . but not necessarily so.

Sixteen mm camera negative tends to pick up abrasions, fingerprints, and other handling marks much more easily than 16mm reversal-positive material.

The deterioration in quality from generation to generation in 16mm negative may be no more, relatively, than in 35mm, but is more noticeable. Therefore, the use of 16mm optical sections cut in with 16mm camera original is not too successful. The difference between print sections is invariably obvious on the screen.

Nor is printing from 16mm negative A&B rolls a complete answer. Here, again, it can be and is being done, but there may be considerable variation in the screen appearance of the fades and dissolves, or occasional solarization may result in a "whiting out" when a fading out or blacking out was intended. (For these reasons, the *Rewind* article points out, General Film Laboratories does not offer a printing service from 16mm negative A&B rolls, only from single rolls.)

Sixteen mm negative film must be handled with extreme care, normally, and this dictates minimum handling within the laboratory. However, 16mm B/W negative is used in photographing television programs and other material which can be shot in long takes, thus reducing the need for handling in editing. It is also used for engineering camera studies and reports, when but one or only a few prints at the most are required, also for sports events and whenever available light dictates use of an ultra high-speed film.

Most 16mm producers use a reversal positive film in the camera from which a "first trial" reversal print can be contact-printed and release prints made either by contact from the edited original (reversals) or from a dupe negative (positive).

Why not make all release on B/W reversal stock?

First, because the reversal dupe stock shows more contrast than the positive

General Film Labs points out. The contrast cannot be varied in reversal printing as it can in negative-positive printing—often necessary in making low-contrast prints for television. As a result of these various factors, a positive print makes a better screen appearance.

Second, cost. The 16mm positive B/W dupe stock is much lower in cost than the reversal. The cost of a dupe negative and five positive prints totals about the same as four reversal prints —and from then on the positive prints are much more economical.

And third, the B/W reversal stock is color-blind — it may or may not translate color tones accurately into black-and-white shades.

The last point is important because, even though both B/W and color reversal films are being used in 16mm production, it should be safe to say that most 16-to-16 B/W release printing today stems from 16mm color originals. The color reversal film has less grain than the B/W reversal, and therefore produces a smoother looking B/W release print through a dupe negative. Also, the producer may obtain either color or B/W prints when he shoots in color.

Assuming the use of a 16mm color reversal film, the producer may then order either a B/W or color reversal workprint. The B/W is several cents cheaper per foot, but it may not show, clearly, all the information that the producer should be able to read from the workprint. As a rule, if 16mm production is in color, the workprint should be in color.

After the original is edited into A&B rolls, a reversal "first trial" print normally is ordered as a final check on editing, sound, optical effects, photography. After a trial print is approved, a 16mm dupe negative is ordered, and from it the positive release pritns are made. General Film Laboratories utilizes 35/32mm stock for both the photo and the sound negatives, which the lab claims provides a superior 16mm print.

There is also a sound track "problem" involved in 16mm reversal-to-positive work.

In order to provide a reversal "first trial" print, printing with B/W reversal originals requires a B-wind *positive* track, while the making of a color reversal print requires a B-wind *negative* track. Then, when the dupe negative is ready, positive release printing requires an *A-wind negative track.*

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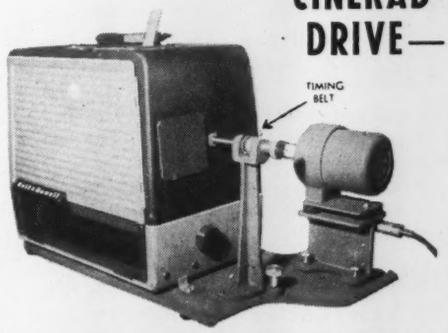

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Normally, this means that the producer must provide two tracks—one for the reversal first trial print, and another for the positive release printing. But, there are several ways to get around this. Electro-printing of the sound track on the first trial involves but 1½¢ additional cost per foot. Or, the production can go directly into dupe negative printing if the producer is confident that his editing, sound, and photography are all in good order. General Film Labs offers one additional choice, when the reversal sound track is to serve only as a check on editing, word use, etc., i.e., print through the base of the A-wind track, for reversal printing. The A-wind track so used acts as a B-wind negative, but the quality of the print sound is rather poor.

One final point: In either 16mm or

35mm work, the *Rewind* article emphasizes that the producer should call on his laboratory for any information or advice he needs, *before* starting production.

Earlier, the article referred to "A-wind" and "B-wind" sound tracks. In concluding the article, the author (unidentified) proceeds to explain these terms, and their importance in the preparation of films for the laboratory.

Intended as a simple means of identifying the right type track for a certain type of printing, the terms sometimes confuse more than they clarify, the article explains. To insure uniformity of procedure and to simplify understanding of the two terms, the Association of Cinema Laboratories has established the following definitions:

A-Wind Printing Optical Sound Track. A-wind optical sound track is a sound track wound for use in making composite (photo and sound) prints from certain types of printing materials. It is so recorded (or printed) that the sound track emulsion will be facing the print stock emulsion in the printing operation. (In 16mm work an A-wind *negative* track is normally required in making positive prints from a black-and-white dupe negative, a color internegative, or on Eastman color reversal master.

Note: A method for identifying an A-wind sound track is as follows: hold the sound roll in the left hand, emulsion side out, and pull head in towards your right. On an A-wind track the sound track side will be the side nearest you. Consult your laboratory for specific requirements.

B-Wind Printing Optical Sound Track. The B-wind optical sound track is wound for use in making composite (photo and sound) prints from certain types of printing materials. It is recorded (or printed) with the sound track emulsion facing the print stock emulsion in the printing operation. (In 16mm work the B-wind negative is normally required in making reversal-positive prints from 16mm Ektachrome original film and 16mm B/W camera negative.

Note: Method for indentifying the B-wind sound track: hold the sound roll in the right hand, emulsion side out, and pull head in towards your left. On the B-wind, the sound track will be the side nearest you.

When the "winding" is of the type required for a certain variety of printing, the emulsion side will be in the desired position for emulsion-to-emulsion contact printing.

In 16mm contact printing, here are some typical sound track requirements:

Color reversal from original Ektachrome: B-wind negative

Color reversal from Ektachrome or Kodachrome master:

Contact—A-wind negative
Optical—B-wind negative

Color positive from internegative:
A-wind negative

B/W positive from camera negative:
B-wind negative

B/W positive from dupe negative:
A-wind negative

B/W reversal from B/W reversal original:
B-wind negative

Although an A-wind negative track is used in both color and black-and-white printing, the track is processed a bit different for each to achieve better sound reproduction in the print, the article concludes. ■

PHOTOGRAPHIC ASSIGNMENTS

Continued From Page 212

TED MCCORD, ASC, RALPH WOOLSEY, ASC, "Bourbon Street Beat"* with Richard Long and Andrew Duggan.

EDWIN DUPAR, ASC, WESLEY ANDERSON, ROBERT HOFFMAN, "Sugarfoot"* with Will Hutchins.

RALPH WOOLSEY, ASC, WALTER CASTLE, ASC, ROBERT HOFFMAN, "Lawman"* with John Russell.

J. PEVERELL MARLEY, ASC, ROBERT HOFFMAN, "Colt .45"* with Wayde Preston.

WESLEY ANDERSON, J. PEVERELL MARLEY, ASC, BURT GLENNON, "The Alaskans"* with Roger Moore and Dorothy Provine.

EDWIN DUPAR, ASC, RAY FERNSTROM, ASC, "Hawaiian Eye"* with Anthony Eisley.

RAY FERNSTROM, ASC, "Bronco"* with Ty Hardin.

JAMES DROUGHT, Commercials*.

MARK DAVIS, ASC, Commercials*.

HARRY STRADLING, ASC, "The Dark at the Top of the Stairs" with Robert Preston and Dorothy McGuire. Delbert Mann, director.

JACK HILDYARD, "The Sundowners" (Technicolor; shooting in Australia) with Deborah Kerr and Robert Mitchum. Fred Zinnemann, director.

WILLIAM DANIELS, ASC, "Oceans 11" (Technicolor; shooting in Las Vegas) with Frank Sinatra and Dean Martin. Lewis Milestone, director.

HAL MOHR, ASC, Commercials*.

ELLIS CARTER, ASC, "Bell Science Series"*.

SOUND STAGE SEA SAGA

Continued From Page 230

from the stage ceiling. To light the scenes we used mostly the incandescent skylights which MGM developed several years ago and which I had used earlier to considerable advantage in lighting interiors for "Julius Caesar." These are large rectangular metal canopies with the interiors painted flat white and having ten 1000-watt incandescent lamps in inverted position arranged in two rows. The bowls of the lamps are aluminum coated to reflect light toward the skylight's interior and thus provide a source of powerful but soft reflected light. (See "Overhead Lighting for Overall Set Illumination," December, 1952, issue, page 528).

The skylights provided a quality of illumination that precisely fitted our requirements for lighting that resembled a stormy and overcast day at sea. The units were suspended from overhead, as is the usual custom, and they had to be kept quite high to avoid damage to the globes from the spray that was kicked up by the wind machines during each take. As it was, one or two bulbs would pop during every take and the fragments would fall into the water. Because of the aluminum coating on the glass, the fragments were easily visible; and for this reason the lamps had to be carefully positioned so that the glass fragments would fall beyond camera range.

Shooting scenes from the suspended platform involved a number of other problems, also. There was the matter of communication between myself and those on the stage floor, and also with the operator of the second camera whenever one was employed for certain complex action—which was frequent. The mist kicked up by the wind machines often got to our lenses, despite the fact we used a clear plastic sheet over the camera most of the time.

But it was the operation of all the special effects, perhaps, which caught the eye and held spell-bound visitors on the sound stage who watched the shooting. When this interesting set was being planned, Arnold Gillespie engaged the services of John Bossart, retired hydraulic and structural engineer, who planned the rocker mount for the ship section as well as all the necessary hydraulic controls. On the apron skirting the pool a waterproof, soundproof shed was erected for housing the controls. Here were installed controls which

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enabled the engineer to set the ship section in motion, and to regulate the extent of each roll of the ship so that variety could be given to this movement according to demands of the scene.

Along the opposite side of the pool two wave machines were installed that churned up the water in a most realistic replica of the sea. Closer to the ship was a huge water tank having a quick-opening spillway and a chute that sent tons of water cascading down into the pool and against the side of the ship. At the same time three large wind machines, whose powerful draughts were fed with streams of water from fire-hoses, provided the effect of high wind and rain to the scene, and at the same time added further turbulence to the "sea."

The success of all these storm effects depended upon precise timing and also on the ability of Director Michael Anderson to order a change of pace or intensity midst the sound and fury of making a shot. To accomplish this, considerable time was spent in rehearsals that involved mainly the technicians

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responsible for operating all the effects devices. Key to the entire operation was a control board set up at a strategic point near the edge of the pool. The board consisted of a number of switches, each with its own pilot light, through which operators of the various equipment—wave makers, wind machines, fire hoses, water tanks, etc.—were signaled. The terrific noise of the wind machines made the use of intercom phones unreliable. The various effects operators, therefore, were given "go" and "stop" signals through the control panel that switched their signal lights on and off.

"Wreck of the Mary Deare" has many dramatic moments, and the script, direction and individual portrayals are among the best ever to grace an MGM production. But it is the special effects which made possible for the picture much of its unusual dramatic photography, and these special effects, so tremendous in scope and so expertly executed, are the surprise "stars of the picture.

("Wreck of the Mary Deare" has completed most of its "first run" showings in the nation's movie houses, but showings continue in the secondary theatres. Students of cinematography who have not seen the picture will profit by seeing it at the next available local showing.—ED.) ■

SYNC TAPE SYSTEM

Continued From Page 236

recording made on another Magnacorder. This leaves one of the Magnacorders free. The narration track is threaded through it so that the narration is played back over a monitor circuit about 5 seconds before it comes to the re-recording circuit, which is switched on only when it is needed.

Such advance aural timing information coupled with a script before operator of the re-recorder enables him to do his work more accurately than if he were watching a picture to get his timing information. At the same time such procedure frees one of the synchronizing channels through the electronic switch to the oscilliscope for the addition of a third playback sound track.

Further improvement of this basic re-recording procedure is still possible, which will eliminate need for the electronic switch altogether and at the same time allow the addition of other playback tracks.

Let us deviate a moment from re-recording procedures and explain how the system can be made compatible with Rangertone synchronous recording. One approach is to combine two half-track recorders with the tape threaded through them in such a way that one machine can record or playback the top half of the tape and the other machine can record or playback the bottom half. An Ekotape and a Ferrograph were used by the author for the purpose. A power rheostat, connected in series with the Ekotape motor to vary the speed, while the capstan of the Ferrograph is disabled, thus leaves the tape speed to the control of the Ekotape machine. With this arrangement a 60-cycle note is recorded on one-half the tape in sync with whatever low-frequency control note had previously been recorded along with the program material. (Note that a tape with an original full track can be used as well as one originally recorded on half track. If a full track tape is used, of course, half track will be erased and replaced by the new 60-cycle signal.)

This two-track tape is now ready for direct transfer to a Rangertone tape. (Certain Rangertone installations are equipped to transfer this 2-track tape to film as is.) The extra transfer step involved here should cause very little loss of quality, especially if the Rangertone tape travels at 15 inches per second. The same two half-track machines are used to transfer the tape to a Rangertone recorder. A Rangertone unit adapted for Synchrotac operation should be used. This type unit has a connection to the Rangertone head which needs only 1.5 volts for operation. For the transfer procedure, the output of the machine (playing back the program half of the tape) is connected to the normal record channel of the Rangertone recorder. The output of the machine playing back the 60-cycle signal is adjusted to 1.5 volts output level and connected to the Syncrotac input to the Rangertone head. For the recording operation no speed control of any of the machines is necessary. The synchronizing of the two tapes is automatic since the 60-cycle signal is recorded directly from one tape to the other.

Now to apply this idea to re-recording procedures.

Let us say that we have a full-width, quarter-inch music track and a full-width quarter-inch effects track. By using the two machines in combination as described above, the effects track is re-recorded on half of the music track and in sync with it, thereby providing two tracks in sync on the same tape!

Again, by using the combination of the two machines during re-recording, three playback tracks and one final recording tape track can all be synchronized by the speed adjustment of one machine.

Further, by using two stereo playback machines with two synchronized tracks on each machine we arrive at the almost fantastic combination of synchronizing 5 tracks (4 playback and 1 record) by adjusting the speed of only one machine! Also, this arrangement would permit the original of 2 tracks and the 1st copy of 2 tracks to be played back. For instance the original recording of music and narration could be coupled with the first copy of two effects tracks, thus preserving good sound quality. By the addition of an electronic switch an extra channel can be provided on the oscilliscope for picture synchronization.

Next comes the problem of starting all the tapes in synchronization. It is entirely possible to devise a system where the motors of the various machines may be turned on automatically by a start mark on the narration track or on the picture track. In practice it has been found that such an elaborate system is not at all necessary. For documentary film work manual starting of all the tracks that have been cued up to their respective start marks has been found to be accurate enough. Addition of a second start mark on all the tracks will provide a quick check at the beginning. This mark should come about five seconds after the first, the idea being that the operators can watch the screen for the second mark and at the same time listen for the second mark on the various sound tracks to determine if all the tracks have been started manually in accurate synchronization. If they were not synchronized at this point, it is a comparatively simple matter to back up and begin again. In any event, synchronous starting is not too much of a problem when it is realized that the start mark and control track from the dialogue or narra-

tion tape are directly recorded on the final mixed tack. This means that in the mixed track, dialogue or narration (which would often be the most critical in terms of synchronization) would be automatically synchronized with the picture in terms of synchronizing done at the edit table, even though the *picture itself* and the other sound tracks may be a frame or so out of sync during the re-recording session.

(Variations and improvements of the re-recording arrangement seem to have no end. Since the first draft of this article, new 4-track stereo tape heads have appeared on the market. Using two of these heads in arrangements similar to those described for half-track heads, four tracks may be recorded in sync and played back from the same tape, automatically synchronized with the final tape, thus affording very flexible re-recording facilities without the need for manual synchronization.

Further, one of the sound tracks could be sacrificed and replaced by a 50 cycle track (60 cycles in America) which could be amplified by a power amplifier to run a sync motor connected to the projector thus providing picture and 3 playback tracks in automatic sync with the final mixed track.)

(To Be Continued)

"NO SECOND CHANCE"

Continued From Page 238

a drowning victim believably, and we shot dozens of "drowners" to acquire two realistic takes.

But there are light moments in our film, also, and occasionally we indulged in rather broad caricatures of certain lifeguard "types," such as the fellow who resorts to theatrics in calling attention to any rescue he makes.

Camera angles were vitally important, first of all to avoid repetitive shots, and secondly, to help retain visual interest. We ran the gamut from bird's-eye aspects, looking down into the pool, to scenes in which water almost lapped into the camera lens.

Our camera moves were plotted in advance to avoid consecutive scenes shot from similar attitudes, and to enhance our interpretation even further we developed a "floating dolly" in the form of a Red Cross dinghy. Where we found it logical to truck the camera along the edge of the pool, or dolly in or out of a situation, the little boat gave us a perfect effect, with someone at the stern propelling it through the water.

Strangely enough, most of our shots were done "off season," at a time when outdoor pools are not in use. Christmas vacation gave us a good supply of school age youngsters who were good swimmers and could perform to our directions. Cooperation from a city manager gave us a pool full of heated water and, despite brisk winds, the entire cast survived.

Our equipment included about twenty silver foil reflectors which gave us ample fill lighting. For poolside closeups where shadows made the use of re-

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flectors impractical, we employed Colortan units with blue gelatin filters to balance the light to the Ektachrome Commercial film we were using.

Swimming pools are notoriously noisy, and we felt the film would be enhanced by literal sounds behind all the scenes, so we recorded sufficient wild sound to cover all the non-sync shots. A number of the scenes required dialogue, and these were recorded double system, with an Auricon Pro 600 and a 16mm magnetic recorder. A Bolex with a sync motor and 400-foot magazines was the workhorse of the job.

Initial response to "No Second Chance" has been gratifying. Encouragement and assistance from the American National Red Cross, and enthusiastic comments by pool managers has led to discussions that may result in a whole series of such swim safety films.

Many thousands of 16mm films are being produced each year by American film makers. Many of these independent producers are motivated by concern for their fellow man. Films have become more than merely a means of entertainment, and Dr. Ben Thompson represents the type of responsible citizen willing to invest his time and money in a motion picture that will serve the high purpose of saving a life. ■

"LA DOLCE VITA"

Continued From Page 235

One scene, which required special consideration by Martelli, showed technicians of a television station photographing the various phases of the miracle. A sudden thunderstorm causes the projectors to explode, and the resultant smoke provided strong contrasts in black and white, creating a sinister atmosphere. And to heighten the pictorial effect, the blast of lights were directed toward the camera. Martelli, apprehensive lest this direct flash of light toward his camera create unwanted halos on the negative, made a number of exploratory tests prior to shooting this scene. The stationary lighting equipment of the television crew in the scene was regulated as to its incidence on Martelli's camera lens, as a means of avoiding the halos. Moving lights in the scene—such as those of automobile headlights, etc. — were directly taken by the camera and recorded on the negative as horizontal halos, result of the difference of incidence on the objective and on the anamorphic lens. This unusual effect was later used for other scenes with satisfactory results.

Another interesting night exterior for "La Dolce Vita" was shot at the Terme of Caracalla in Rome. Over 500 kilowatts of illumination was employed to light the large area and counteract the tremendous light absorption of the ancient Roman walls. Here a characteristic night club was built, having the decor and styling of old Roman times. The scenes played here was about Sylvia, a famous star (played by Anita Ekberg) who loses herself in the stimulating atmosphere of the place. Here Martelli's photography deliberately points up Miss Ekberg's baroque beauty—the softness of her features and the brightness of her bonde hair as she dances against the dark background, wearing a black costume and illuminated by indirect lighting.

"Among the actresses," said Martelli, "Miss Ekberg was the most photogenic." And Martelli's enthusiasm for the way she photographed inspired him to even greater photographic accomplishment when shooting scenes at the Fountain di Trevi. These scenes display unusual composition in color tones and composition—especially evident when Miss Ekberg, surrounded by the rich architecture of the fountain, playfully steps in and wades fully clothed to the cascade. Martelli directed the lighting for this scene from overhead. (The scene was filmed fifteen times and after each take, Miss Ekberg was massaged with alcohol as a chill preventive!)

Martelli displayed a change of pace in his lighting when it came time to shoot the scene of the "star's" press conference in the lounge of a plush hotel. Here Martelli employed lighting of high key, as for a sophisticated comedy, to point up the superficial atmosphere of the conference and the surroundings.

In the scene of the party at the castle, the photography and lighting was planned to suggest a bewitching atmosphere where the characters appear an essential part of the surroundings. The exteriors for this sequence were shot at 9 o'clock in the morning, with normal corrective filters used on the camera lens to produce a moonlit night effect.

While normally it is considered most important to concentrate lighting on an actor's eyes, in the case of actor Marcello Mastroianni cinematographer Martelli decided to concentrate attention on the actor's facial features. He arranged the lighting to accent his special makeup with the emphasis on heavy shadows to achieve a more dramatic facial expression.

Continued on Page 258

WHEN MGM'S "Butterfield 8" company, working in New York City, suspended production as a result of the actors' strike, the event had a bright side—at least for cinematographer Joseph Ruttenberg (left). It was also the eve of Ruttenberg's 45th anniversary as a motion picture cameraman. At his suite in the Plaza Hotel, Laurence Harvey and Dina Merrill, two stars of the film, presented Ruttenberg with a brown leather case in behalf of his colleagues, cast and crew working on the picture. Accompanying the case was an engraved silver plate bearing the inscription: "To Joe Ruttenberg with affection from the members of "Butterfield 8" company on the memorable Anniversary of his 45th year in Motion Pictures. New York, 1960."

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CLASSIFIED ADVERTISING

"LA DOLCE VITA"

Continued From Page 256

By contrast, lighting and photographing actress Anouk Aimeé was most difficult because of her small features, which required use of strong, flat light.

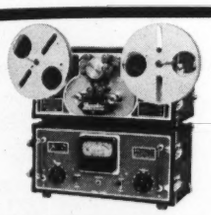
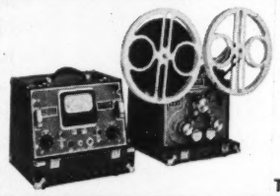
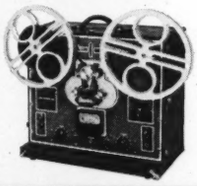
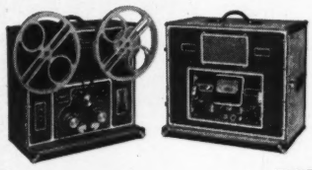
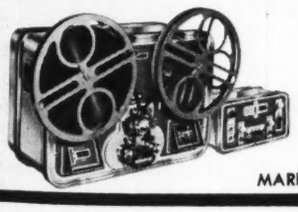
For this picture, via Veneto, Rome's famous boulevard, was duplicated at the studio, although some night exteriors were shot in via Veneto itself. The latter scenes were photographed with fast DuPont Superior 4 negative so that only a few photoflood lamps hidden among the trees lining the boulevard were all that were required to amplify the existing light.

Commenting on his association with director Fellini, Martelli said: "Fellini prefers unlimited frames, which invariably heightens the problem of lighting. Sometimes, also, he likes to shoot a scene with the camera negotiating a full 360 degree pan. Working with him on the set one must be quick, have progressive ideas, and a flair for improvisation as Fellini himself improvises—changing the script during takes, asking for the most daring techniques to achieve the desired effects. For example, while shooting scenes of the arrival of Sylvia at Ciampino airport, Fellini asked that the camera be panned toward the plane standing ready for the takeoff and with the sun directly behind it. I made the shot, with its predominantly back lighting, apprehensive of the results. But as it so often happens when Fellini suggests some unorthodox shot, it came out surprisingly well on the screen."

Shooting this picture occupied the better part of five months—from April to September—of which two months were spent shooting the night exteriors. Over 300,000 feet of DuPont Superior 2 and 4 negative was exposed for the picture with a Mitchell BNC camera equipped for Totalscope wide-screen photography. (The camera optics comprised of Cooke lenses plus the Totalscope anamorphic lens). For the aerial shots made from a helicopter for the opening sequence of the picture, an Arriflex 35 camera was used with similar optics. More than 9,000 feet of negative was shot during this phase of the photography. The combined negative footage was edited down to approximately 16,000 feet and the finished print has a screening time of three hours.

*How to select a recorder to start your MAGNASYNC-MAGNAPHONIC SOUND SYSTEM

Sound Equipment Checklist

		LIGHTWEIGHT	MEDIUM WEIGHT	16 MM FILM	17½ MM FILM	35 MM FILM	REWIND	FOOTAGE COUNTER	POWER AMPLIFIER	MONITOR SPEAKER	TORQUE MOTORS	PLUG-IN AUDIO	PUSH BUTTON CONTROL	REMOTE CONTROL	SLIDE-WIRE POTS	FILM MONITOR	SYNKINETIC MOTION	PLUG-IN HEADS
 X-400	When lightweight portability is a **must** the 27 lb. X-400 Type 1 is the answer! Another reason so many producers choose this machine is that it is genuinely professional, and yet, surprisingly economical! From $985.	X		X			X	OPTIONAL	OPTIONAL	OPTIONAL						X	X	OPTIONAL
 TYPE 1	The Type 1 is a miniaturized version of the Type 5. Low power consumption and extreme portability has made this 39 lb. unit a popular selection for remote location production by leading professional motion picture studios. From $1360.	X		X	X		X	X	X	OPTIONAL		X				X	X	OPTIONAL
 TYPE 15	The X-400 Type 15 is designed for the man who wants everything in one case . . . playback amplifier, monitor speaker, footage counter and torque motors. You can be proud to have this machine represent you on any sound stage! From $1385.		X	X			X	X	X	X	X					X	X	OPTIONAL
 TYPE 5	The most popular magnetic film recorder in the world is the Type 5! With this unit and all its operational conveniences, you are definitely in the "major league." The Type 5 owner always starts his pictures with a special feeling of confidence in the realization that he has allowed no compromise in the selection of equipment. From $1570.		X	X	X	X	X	X	X	X	X	X				X	X	OPTIONAL
 MARK 1X	There is nothing on the market that compares with the remarkable Mark 1X. This unit is in a class by itself . . . with push-button remote controlled relay functions, plug-in audio elements and all the "extras" that make for flawless recording under the most adverse conditions. From $2145.		X	X	X	X	X	X	X	OPTIONAL	X	X	X	X	OPTIONAL	X	X	X

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